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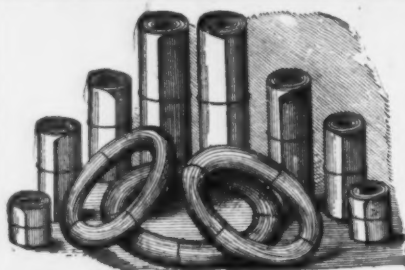
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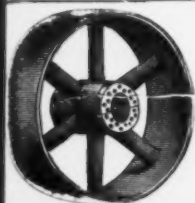
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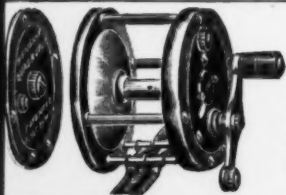
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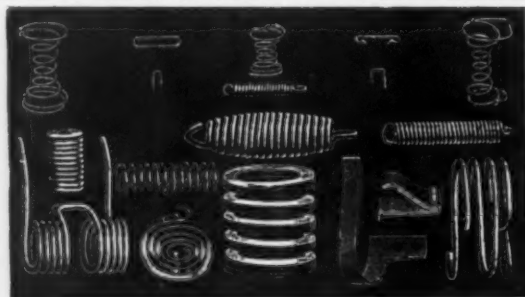
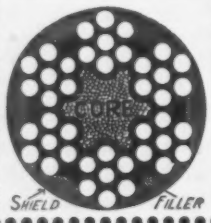
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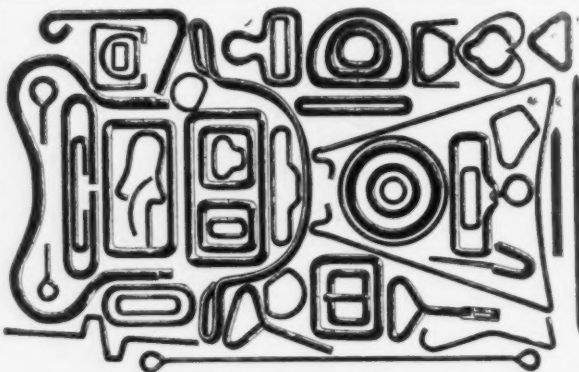
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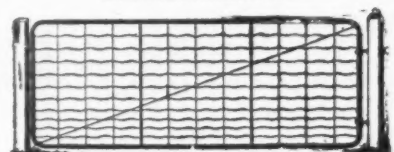
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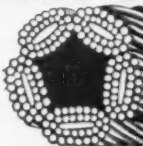
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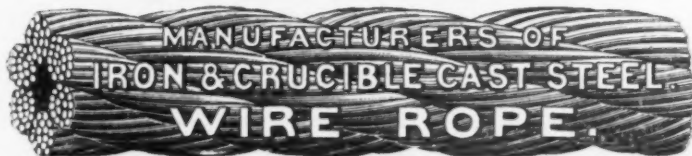


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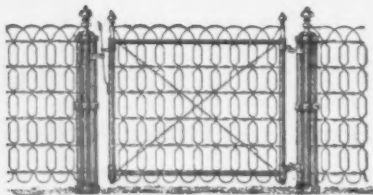
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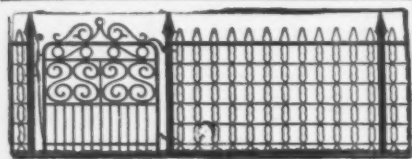


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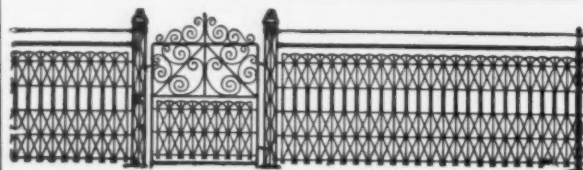
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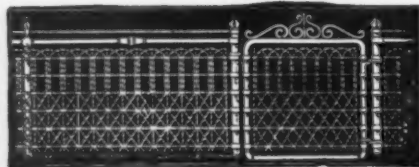
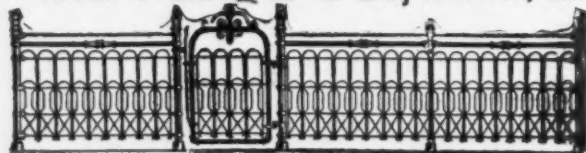
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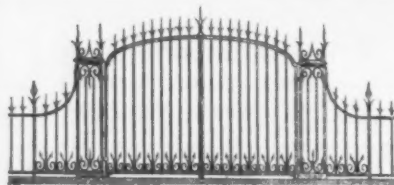
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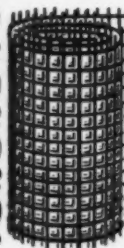
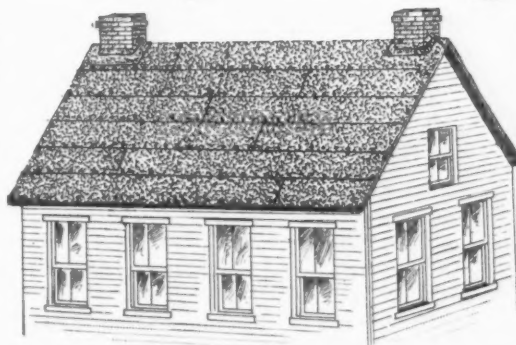
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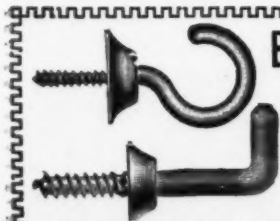
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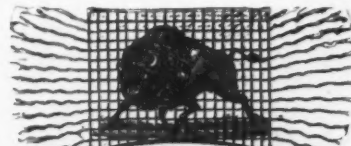
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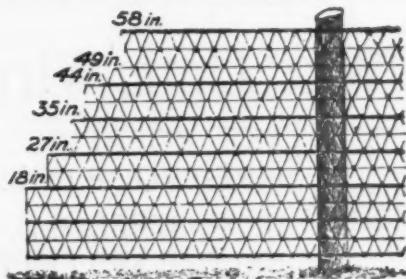
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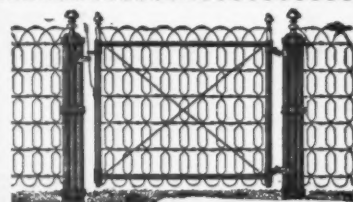
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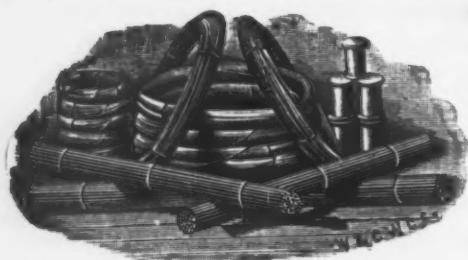
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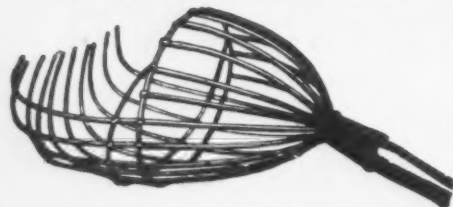
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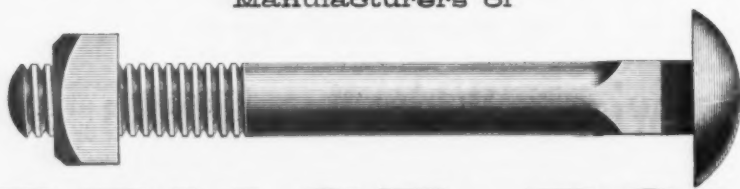
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"There ought to be a good long shelf of books in the office or balance room of every iron and steel works' laboratory, for they are as essential to its proper equipment as the apparatus and chemicals. If granted the opportunity the chemist of an iron or steel works can give practical aid in so many lines that his employer will find it to his direct advantage to encourage his chemist by placing the best books on the subject at his disposal. \* \* \* The writer based the recommendations on a personal examination of all of the books printed in English on analytical chemistry and allied subjects, 112 in number, on a long experience in the use of many of them and on an intimate knowledge of the many ways in which a chemist can aid his employer in the manufacture of iron and steel. \* \* \* The most successful professional chemists are those willing to still class themselves as students, and it is safe to say that in every one of the books recommended in this article at least one good new idea may be found, which if applied by the chemist in his laboratory work will soon save his employer many times the cost of the book."

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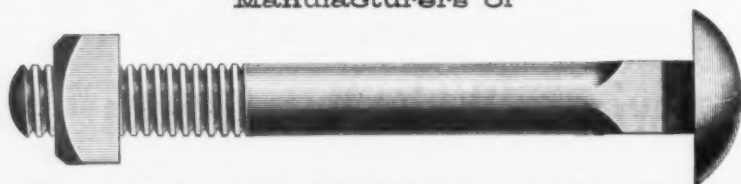
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**Recommended by ALBERT LADD COLBY.**

We quote from an article by Mr Colby published in THE IRON AGE of June 15, 1899, and append a list of the books which are recommended collectively for the iron and steel works chemist, with their prices:

"There ought to be a good long shelf of books in the office or balance room of every iron and steel works' laboratory, for they are as essential to its proper equipment as the apparatus and chemicals. If granted the opportunity the chemist of an iron or steel works can give practical aid in so many lines that his employer will find it to his direct advantage to encourage his chemist by placing the best books on the subject at his disposal. \* \* \* The writer based the recommendations on a personal examination of all of the books printed in English on analytical chemistry and allied subjects, 112 in number, on a long experience in the use of many of them and on an intimate knowledge of the many ways in which a chemist can aid his employer in the manufacture of iron and steel. \* \* \* The most successful professional chemists are those willing to still class themselves as students, and it is safe to say that in every one of the books recommended in this article at least one good new idea may be found, which if applied by the chemist in his laboratory work will soon save his employer many times the cost of the book."

1 Arnold, J. O. Steel Works Analysis....	\$3.00	15 Classen, A. Quantitative Chemical Analysis by Electrolysis.....	\$3.00
2 Blair, A. A. The Chemical Analysis of Iron	4.00	16 Smith, E. F. Electro-Chemical Analysis...	1.25
3 Lord, M. W. Notes on Metallurgical Analysis, Chemical.....	1.25	17 Gill, A. H. Gas and Fuel Analysis for Engineers.....	1.25
4 Methods of Iron and Steel Analysis About Pittsburgh.....	1.00	18 Hempel, W. Methods of Gas Analysis.....	1.90
5 Crookes, Wm. Select Methods of Chemical Analysis.....	8.00	19 Winkler, Clemens. Handbook of Technical Gas Analysis.....	3.00
6 Fresenius, C. R. A System of Instruction in Quantitative Chemical Analysis.....	6.00	20 Poole, Herman. The Calorific Power of Fuels.....	3.00
7 Phillips, H. Joshua. Engineering Chemistry	4.00	21 Snow, W. B. Steam Boiler Practice.....	3.00
8 Stillman, T. B. Engineering Chemistry....	4.50	22 Comey, A. M. Dictionary of Chemical Solubilities.....	5.00
9 Cairns, F. A. Manual of Quantitative Chemical Analysis.....	2.00	23 Vulté, H. T., and Neustadt. Laboratory Manual of Inorganic Preparations.....	2.00
10 Cheever, B. W.—Smith, F. C. Select Methods in Quantitative Analysis.....	1.75	24 Clarke, F. W. The Constants of Nature, Part V., New Edition.....	2.00
11 Talbot, H. P. Introductory Course in Quantitative Analysis.....	1.50	25 Cremer, J. H., and Bicknell, G. A. Chemical and Metallurgical Handbook.....	3.00
12 Thorpe, T. E. Quantitative Chemical Analysis.....	1.50	26 Kent, Wm. The Mechanical Engineer's Pocket Book.....	5.00
13 Ostwald, W. Scientific Foundations of Analytical Chemistry.....	1.60		
14 Sutton, Francis. Systematic Handbook of Volumetric Analysis.....	4.50		
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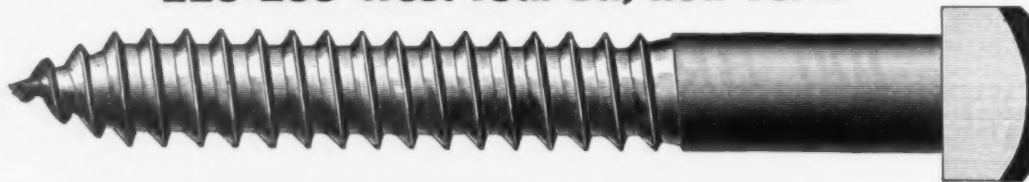
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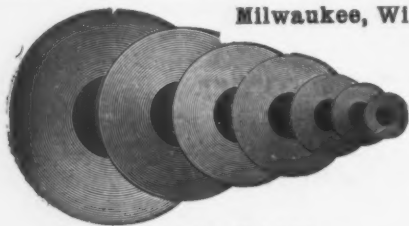
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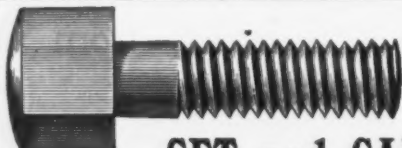
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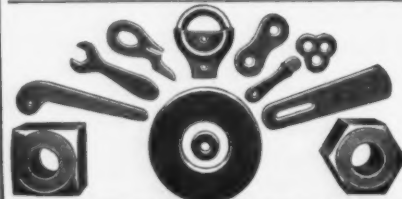
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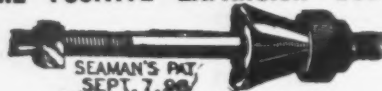
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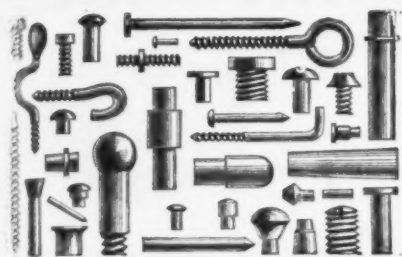
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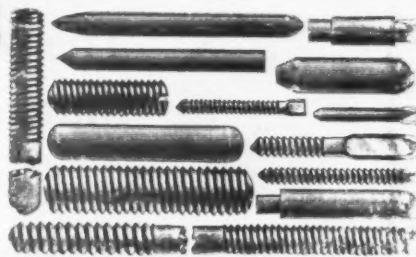
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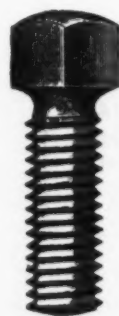
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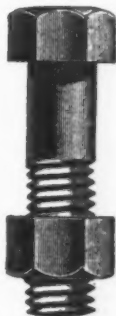
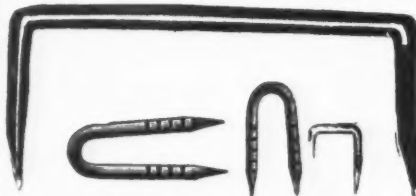
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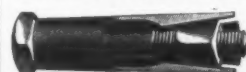
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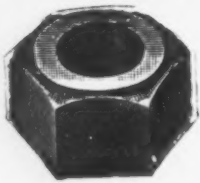
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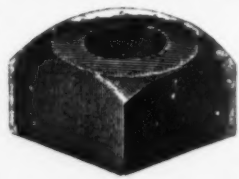
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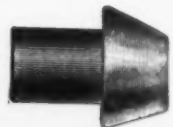
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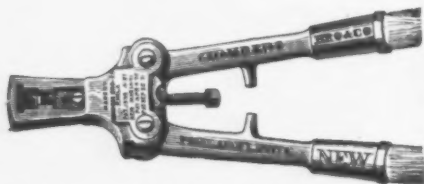
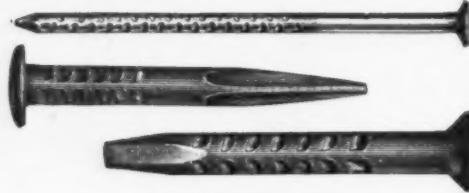
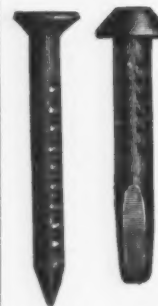


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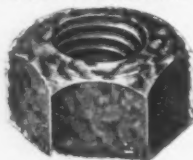
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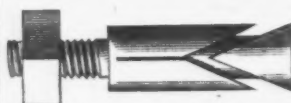
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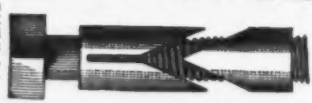
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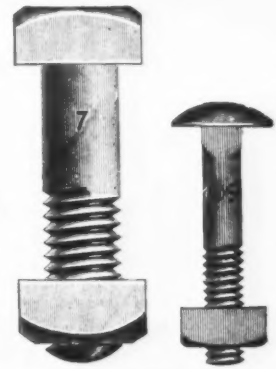
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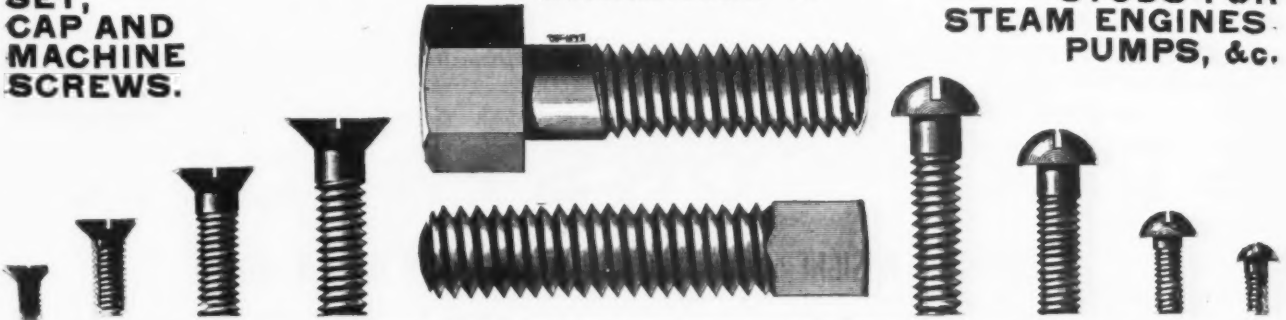
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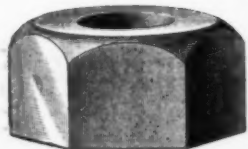
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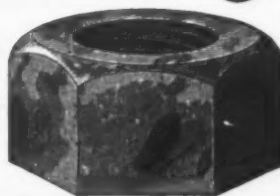
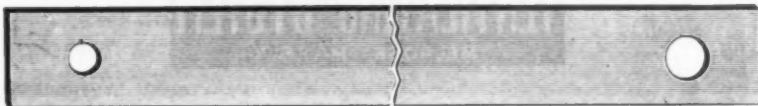
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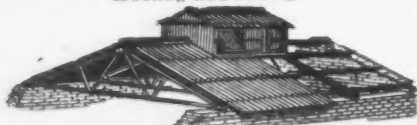
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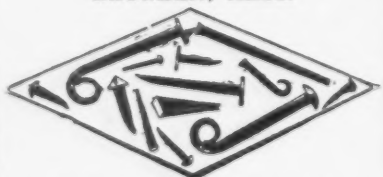
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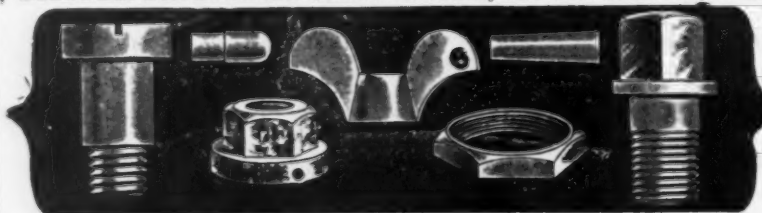
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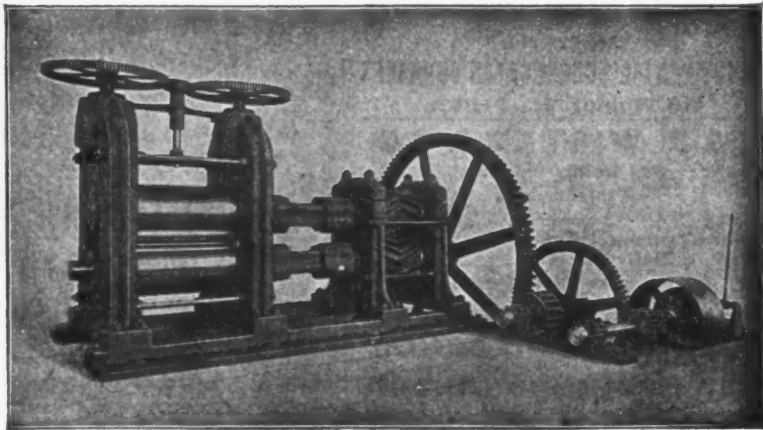
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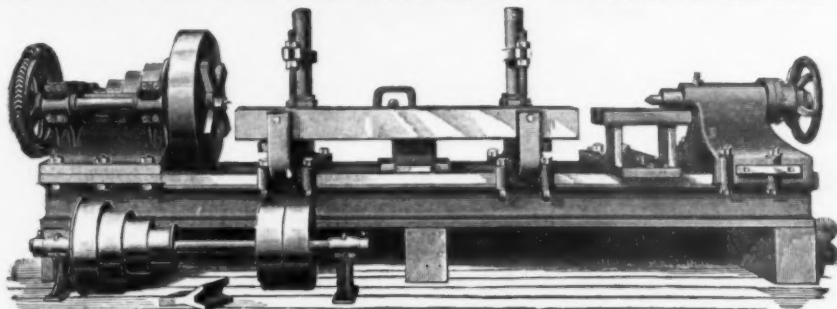
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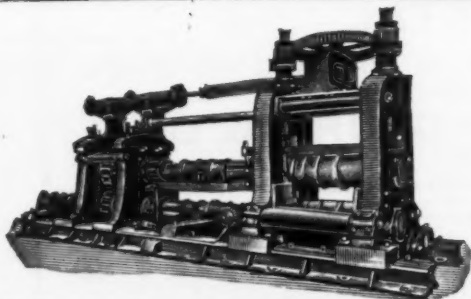
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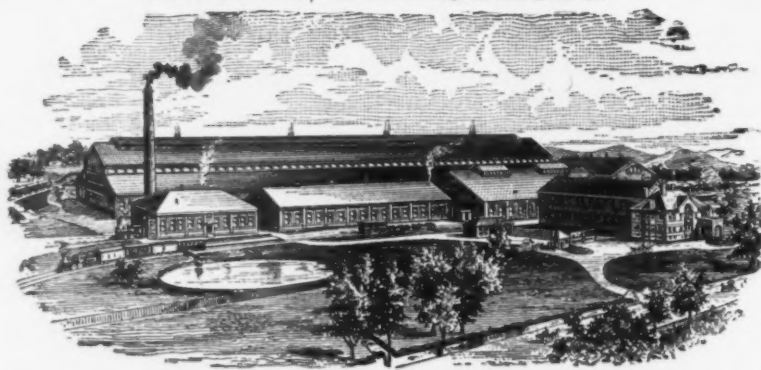
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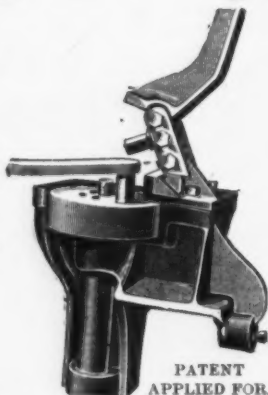
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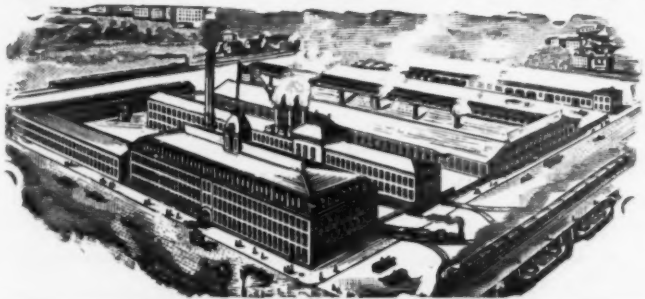
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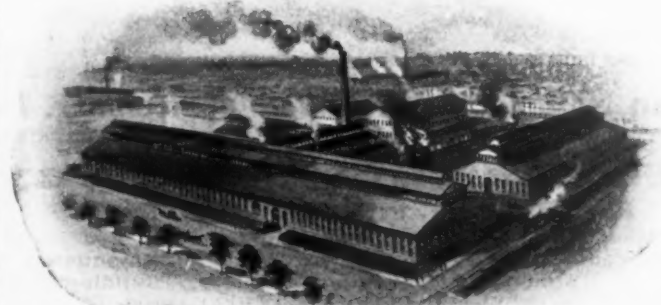
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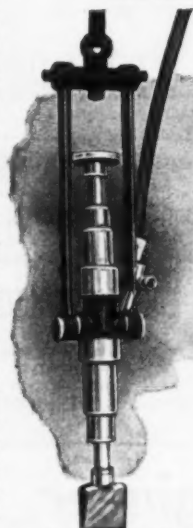
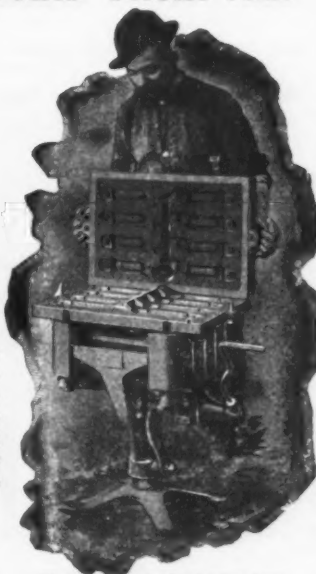
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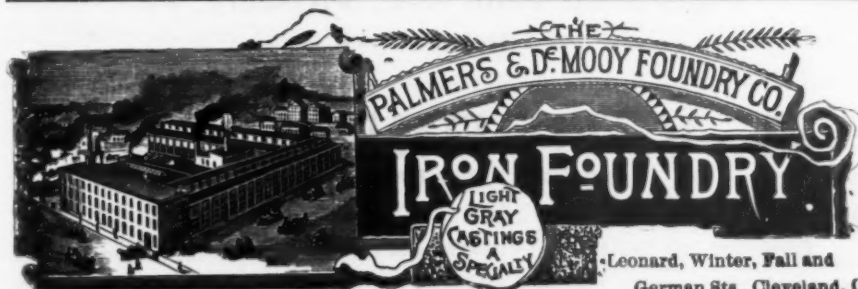
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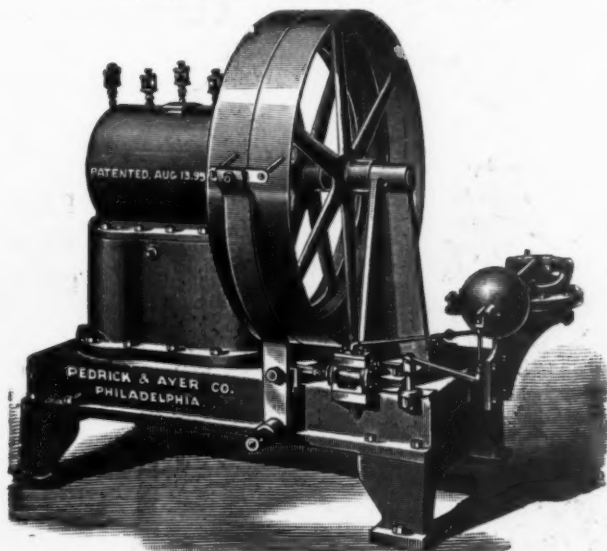
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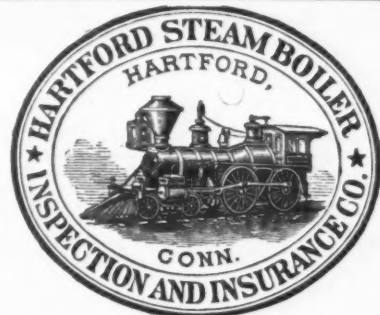
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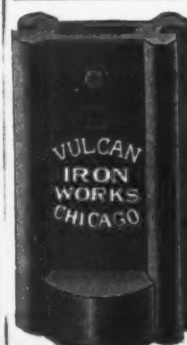
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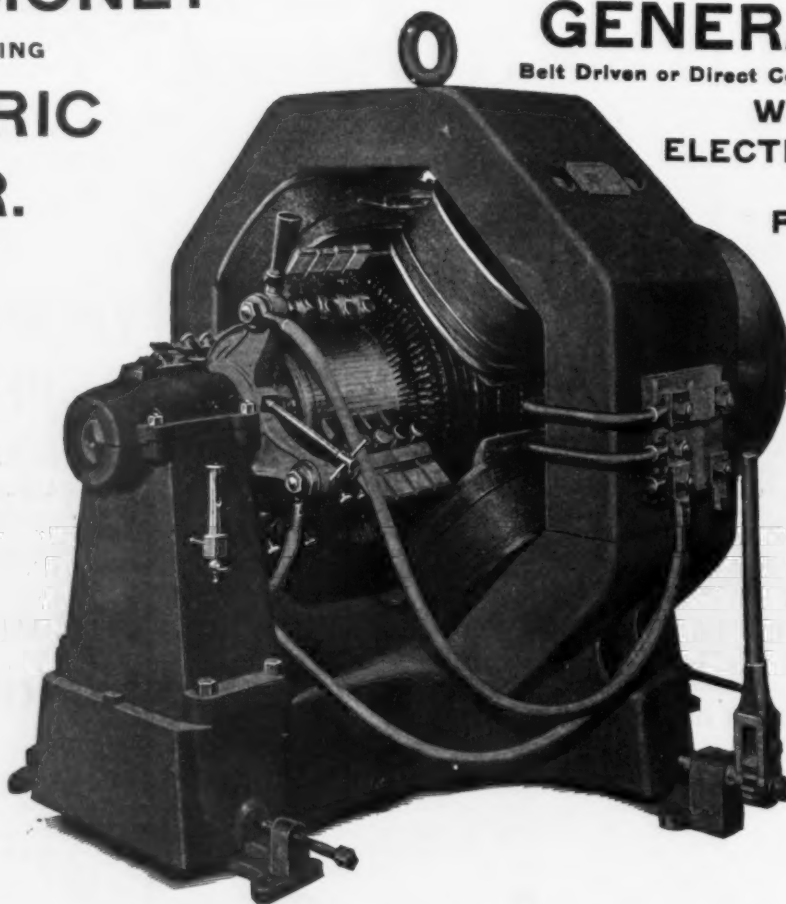
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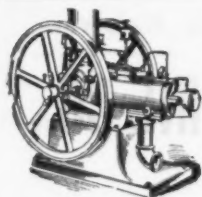
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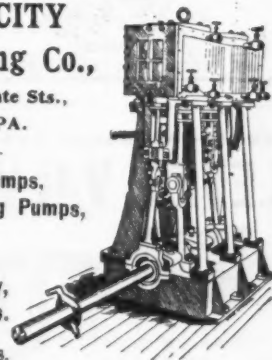
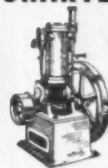
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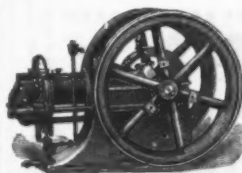
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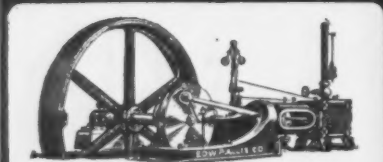
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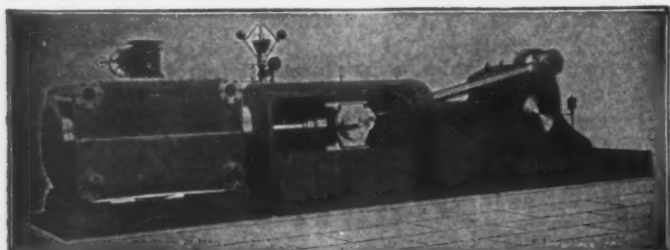
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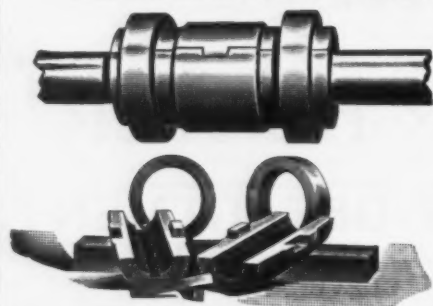
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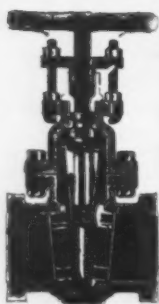
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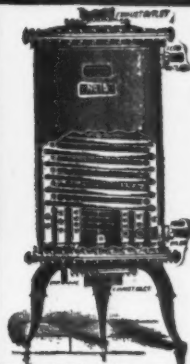


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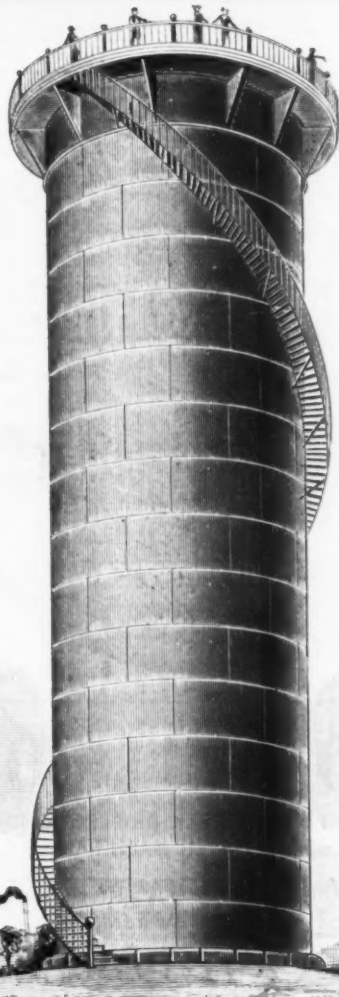
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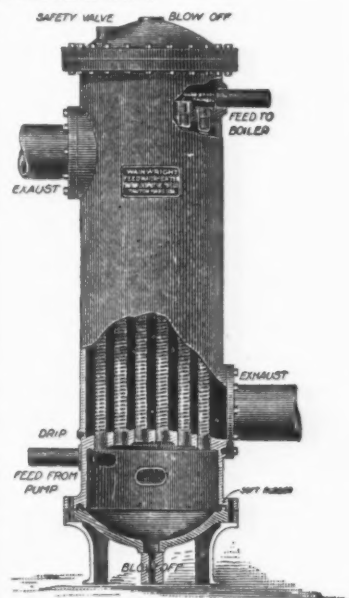
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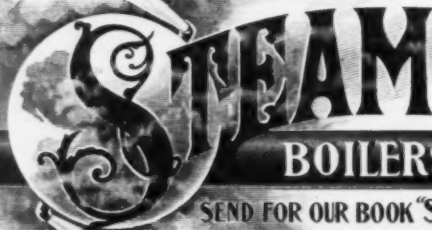
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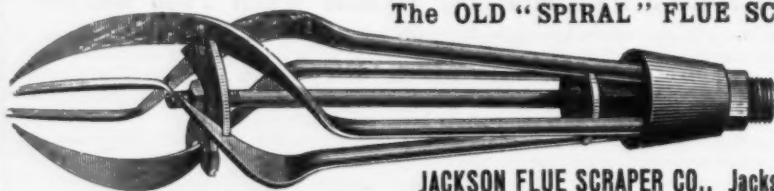
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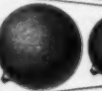
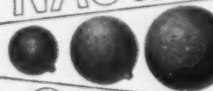


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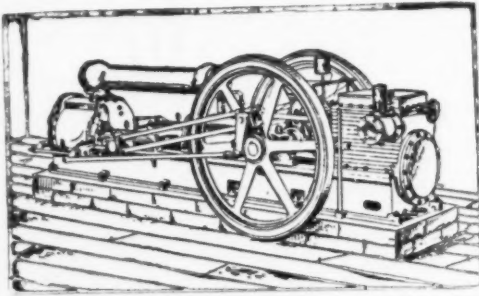
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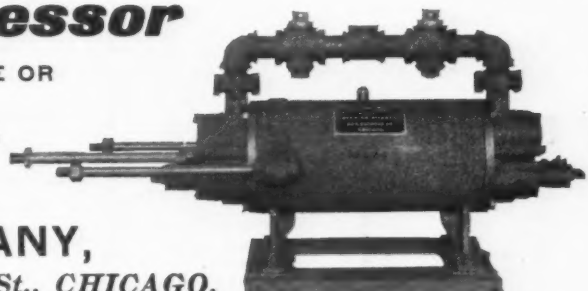
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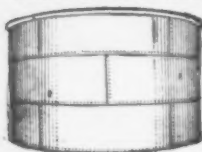
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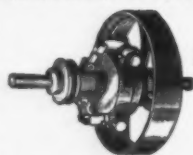
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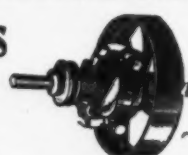
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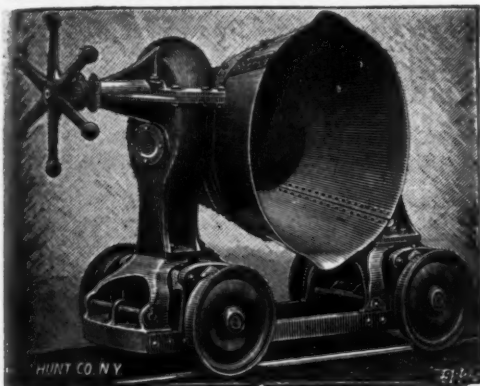


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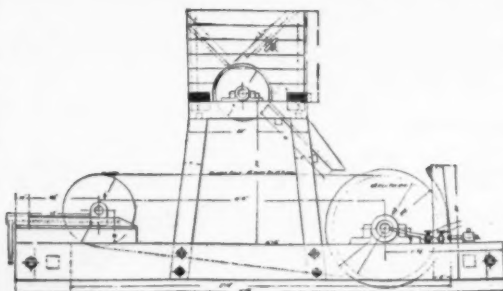
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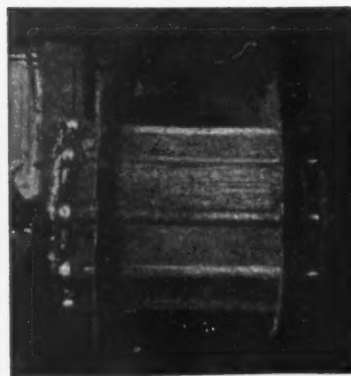
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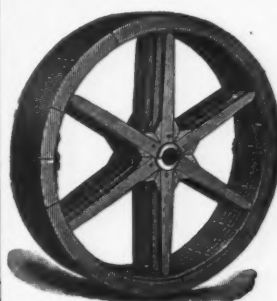
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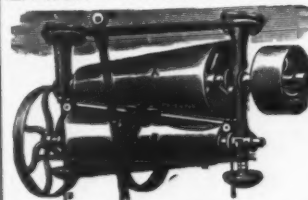
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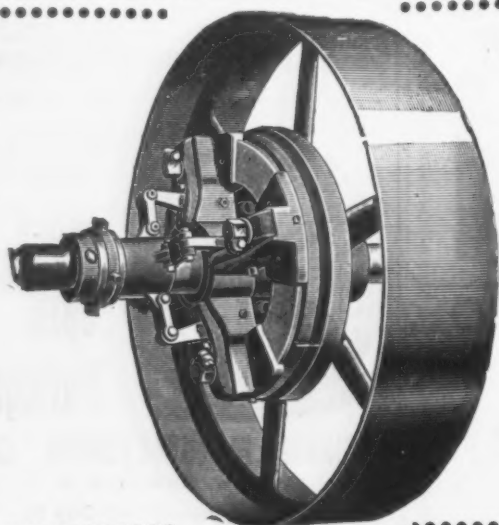
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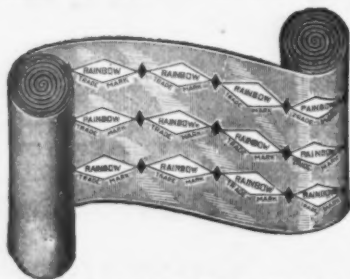
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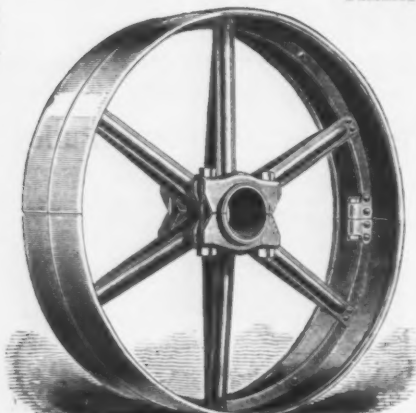
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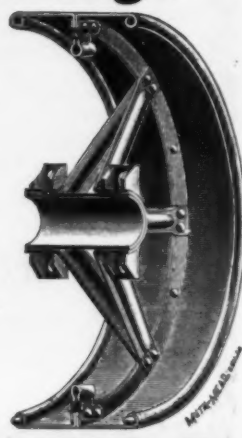
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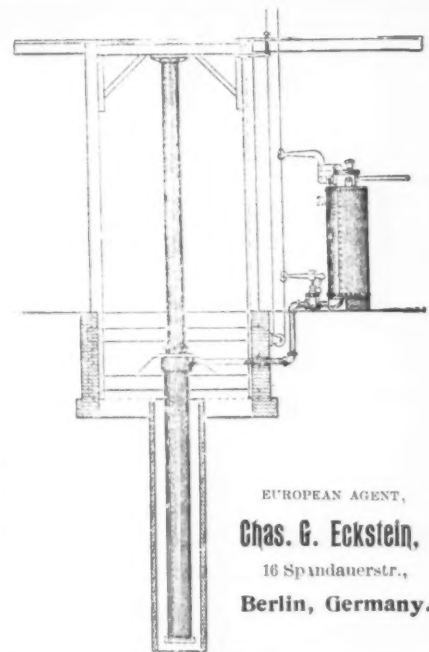
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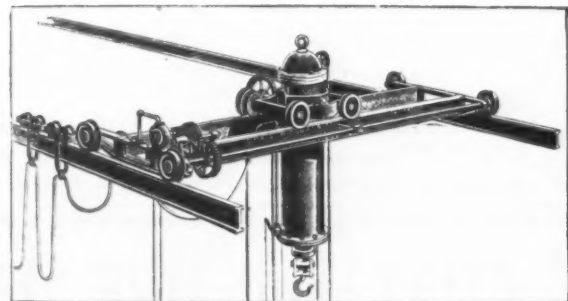
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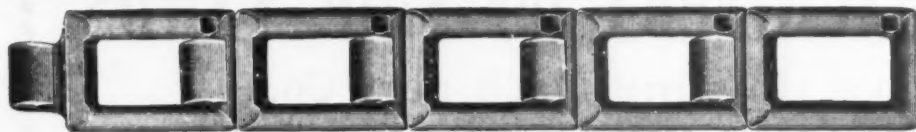
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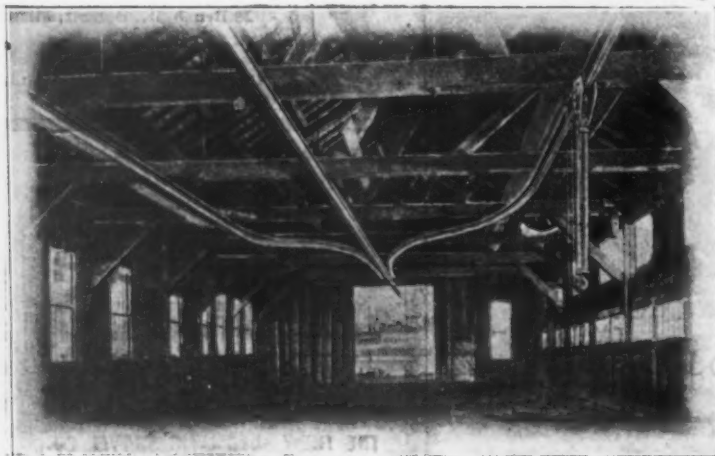
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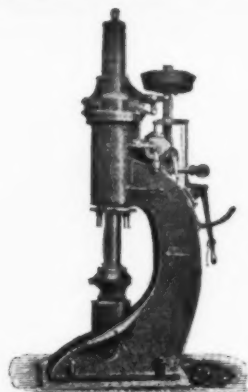
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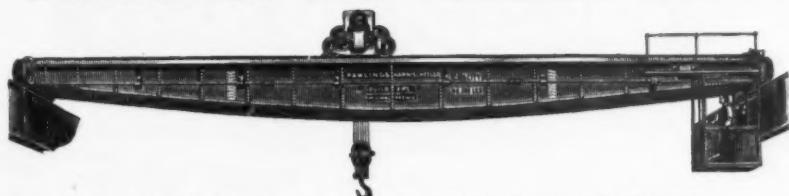
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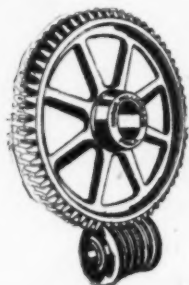
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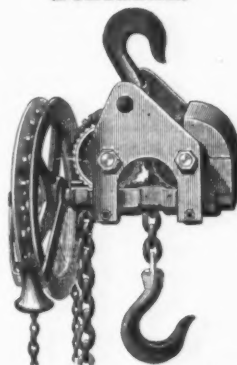
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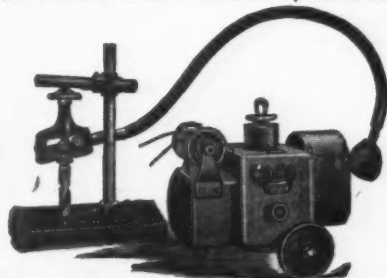
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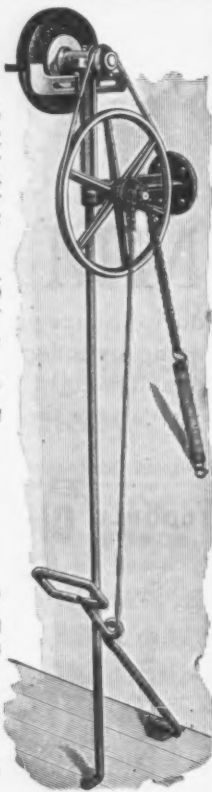
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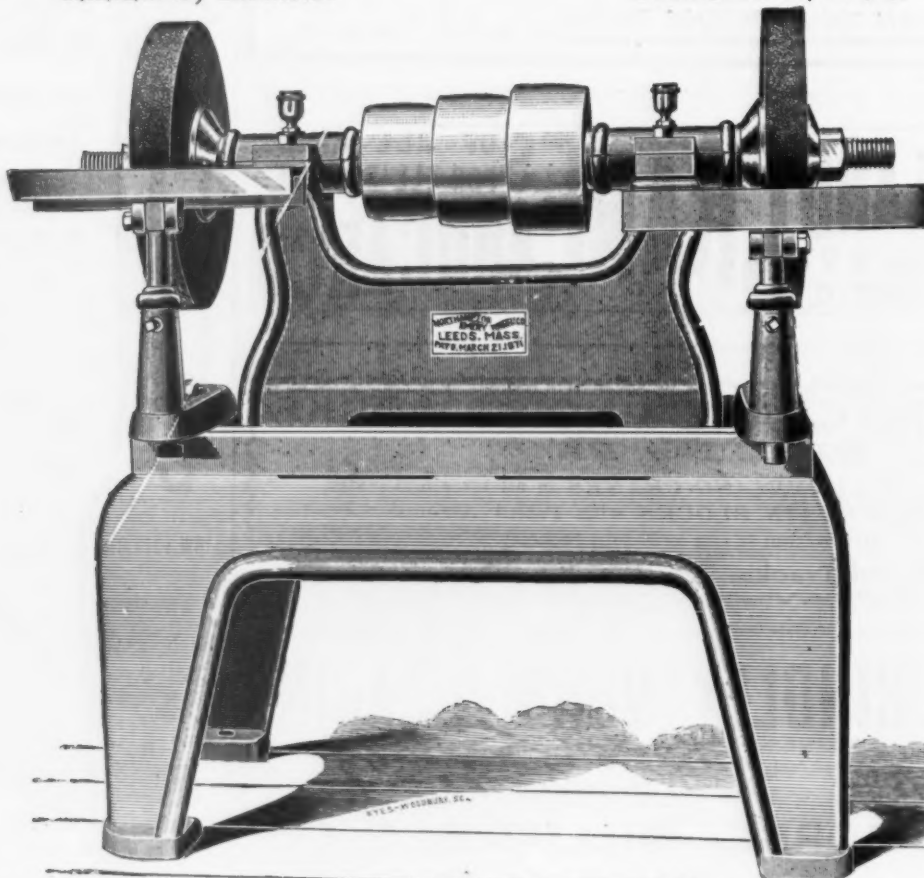
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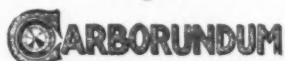
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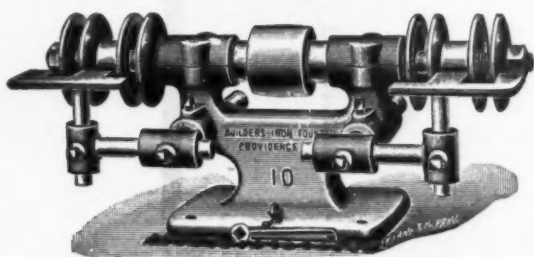
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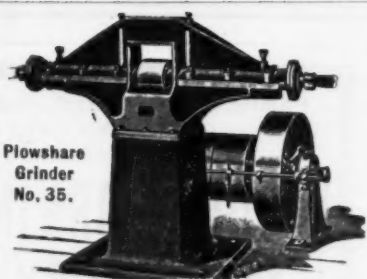


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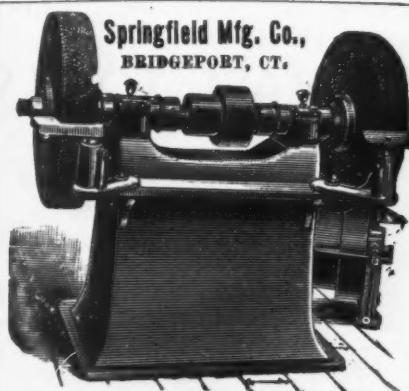


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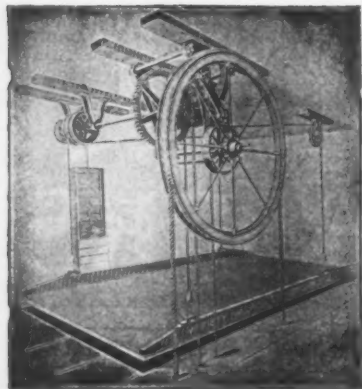
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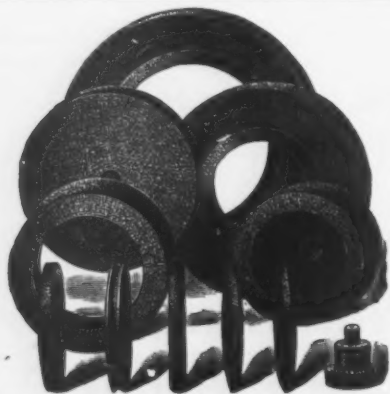
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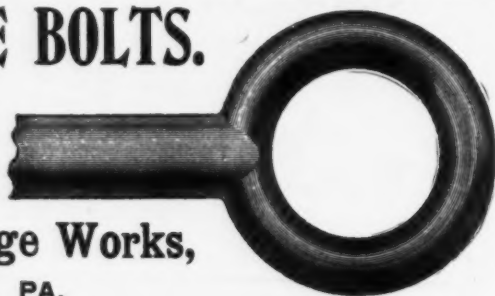


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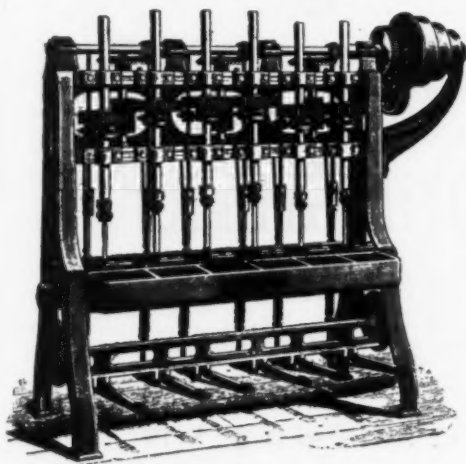
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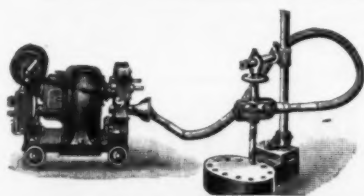


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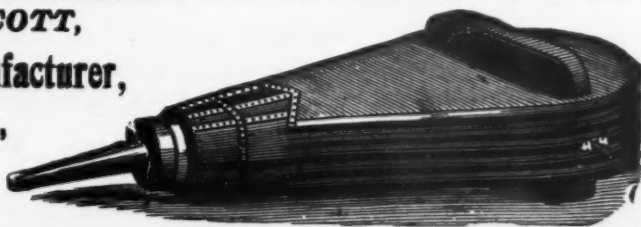
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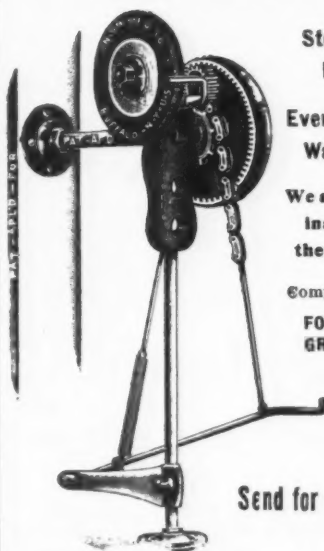
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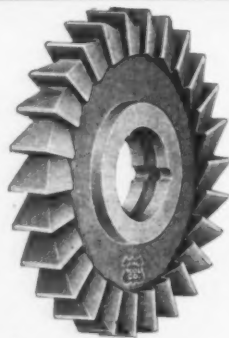
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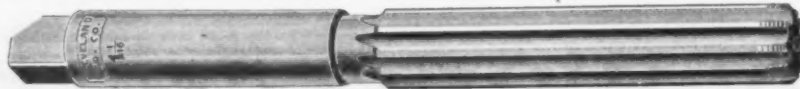


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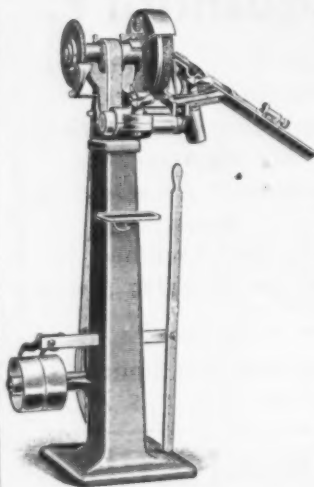
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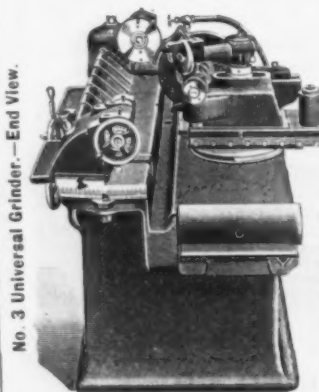
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# MORSE TWIST DRILL AND MACHINE CO.,

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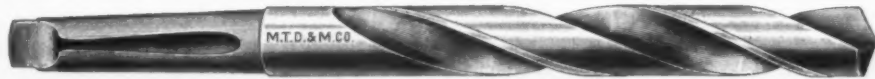
Having purchased of M. L. Andrew, of Cincinnati, Ohio, his patents for Sockets or Chucks, we can furnish Drills or other tools to fit them.

The accompanying cuts represent the style of socket and shank of drill used in this socket. The drills are held in place by the key in the socket. As the groove extends the entire length of the shank there is no difficulty in placing the shank in the proper position.

There are obvious advantages to be gained by the use of this style of socket. Further particulars furnished on application.

No. 102½.

Drills with Grooved Shanks to Fit Andrew's Sockets.



No. 100 H.

ANDREW'S PATENT  
DRILL SOCKETS.

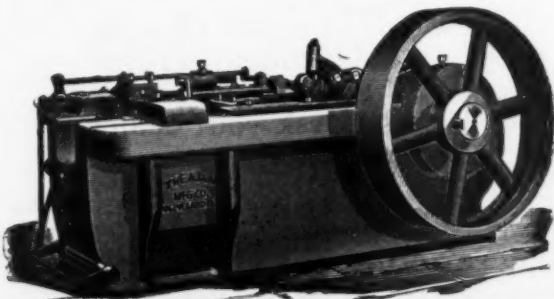


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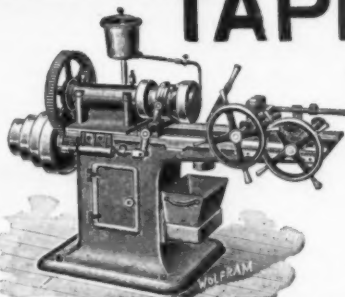
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Upsetting Machines,  
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Hot Pressed Nut Machines,  
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Special Nut and Bolt Machinery.



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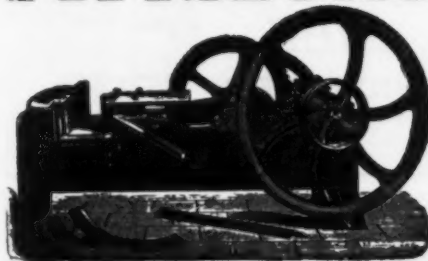
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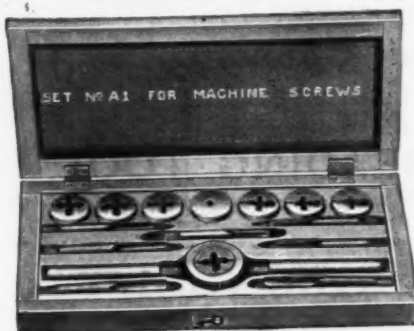
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wrench, complete in case.

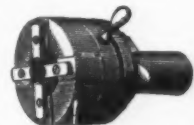
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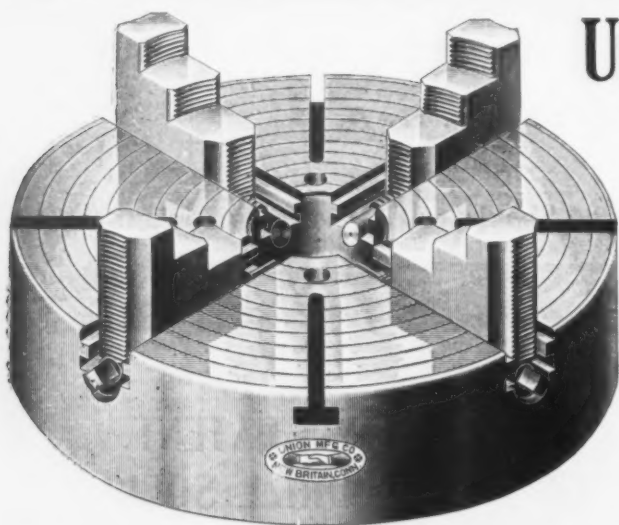
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A well made chuck of great strength, "T" slot commencing with 10 in. size and up.

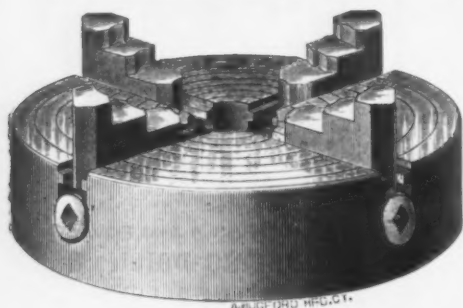
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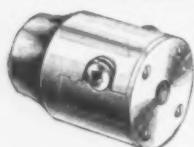
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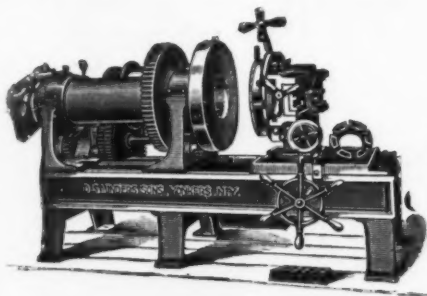
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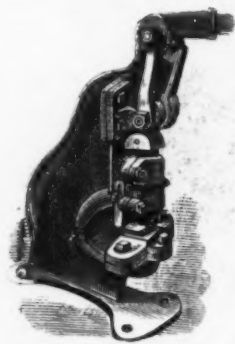
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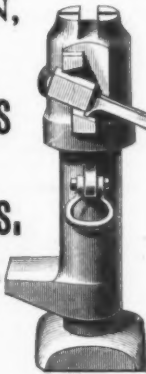
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Roller Tube Expanders,  
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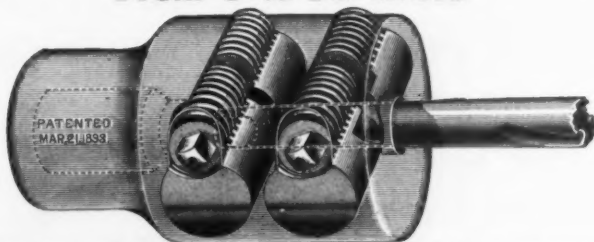
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**Straight or Taper Shank Drill**  
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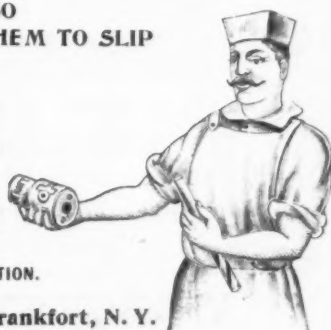
ITS ONLY PURPOSE TO HOLD DRILLS SO  
IT IS IMPOSSIBLE FOR THEM TO SLIP  
is the object of the

## PRATT CHUCK

How well it has qualified is borne out by every user. Its  
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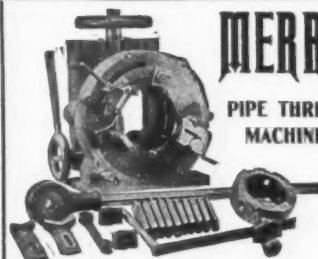


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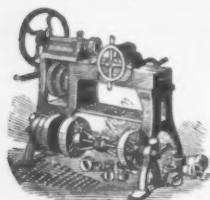
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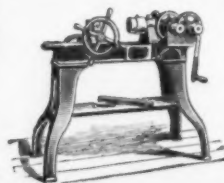


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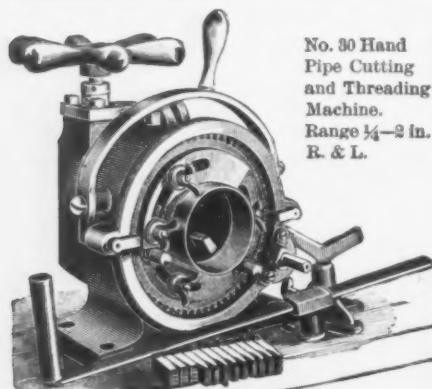
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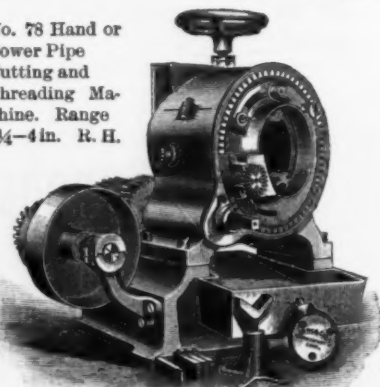
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#### FORBES' PATENT DIE STOCK, FOR HAND OR POWER.

OUR HAND MACHINES are the only portable hand machines in the market with which one man can cut off and thread large pipe up to 12 inches diameter without assistance. Two and three-inch pipe is threaded by using only one haul on the crank, thus saving much time and hard labor.

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Cutting and  
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MACHINE SCREW TAP.

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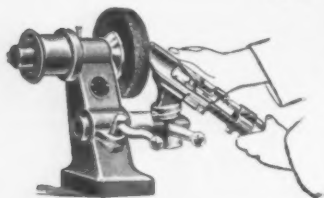
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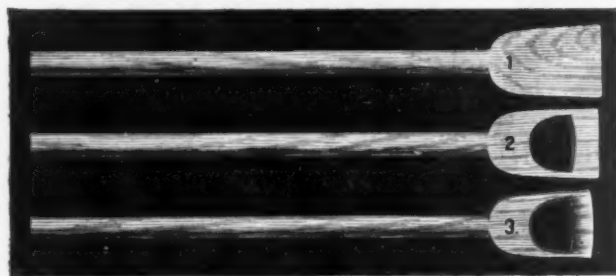


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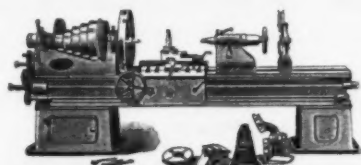
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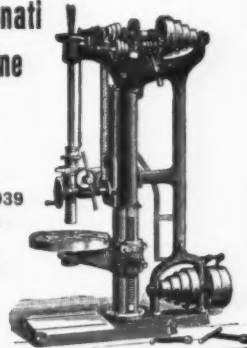
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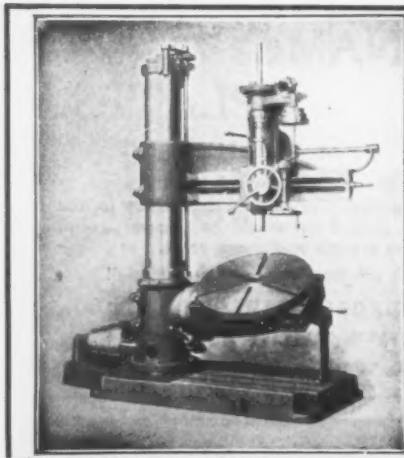
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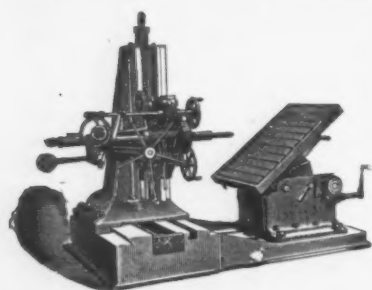
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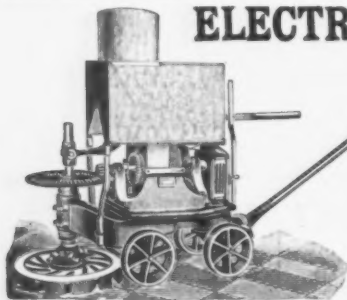
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For Smoothing Marble and Mosaic Floors.

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All kinds of stone working and handling machinery, including

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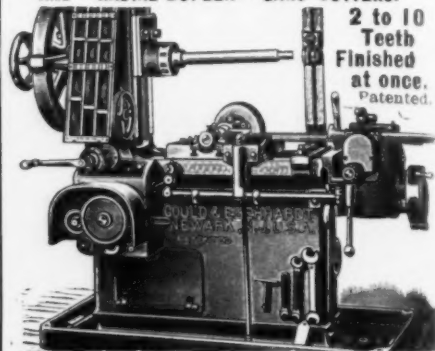
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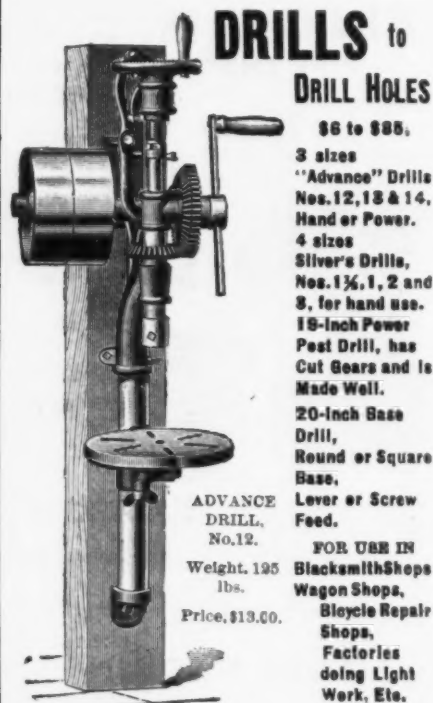
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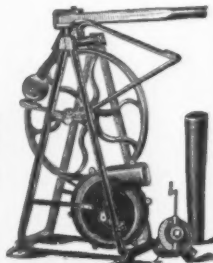
Lancaster Shrinker.



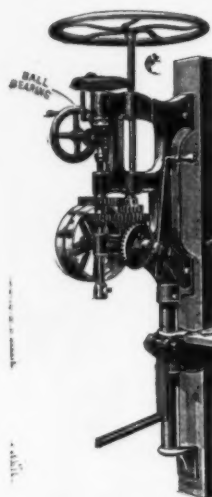
Columbian Bender.



4-inch Wheel Crank Blower.



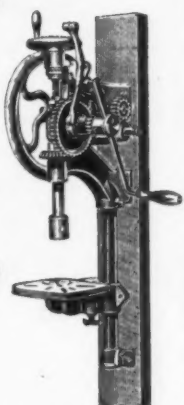
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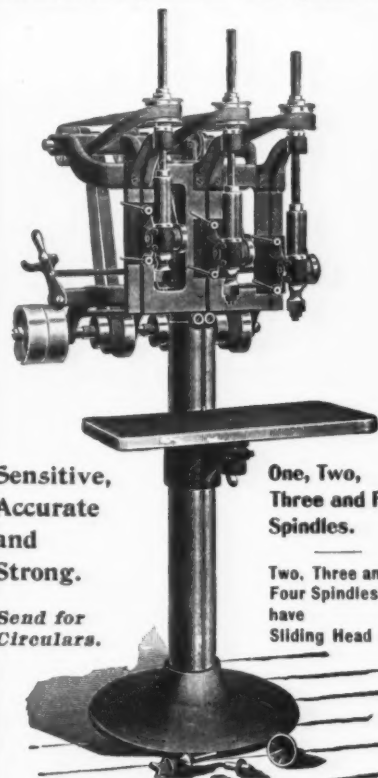
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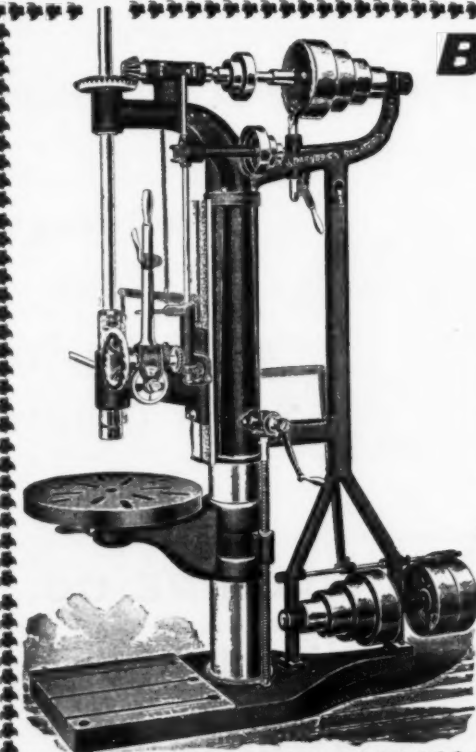
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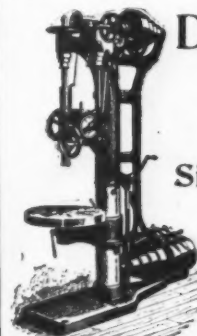
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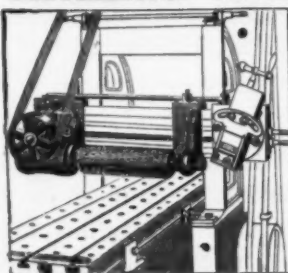
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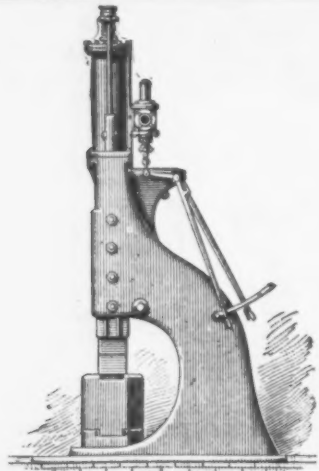
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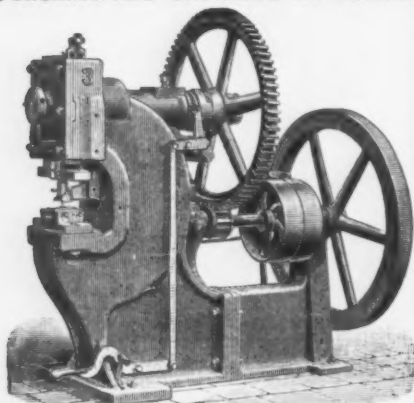
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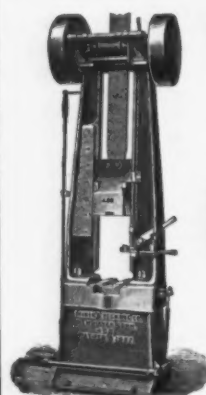
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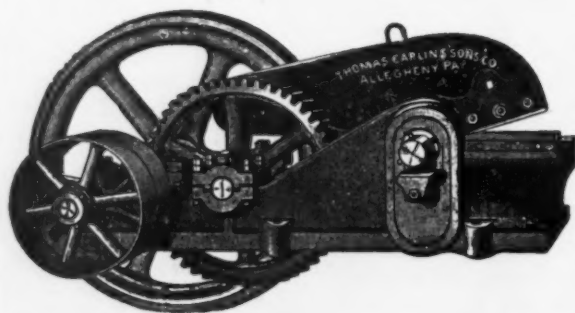


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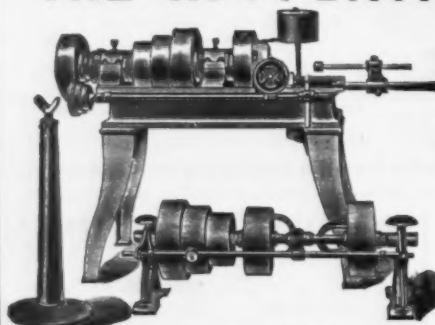
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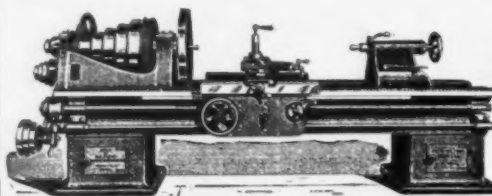
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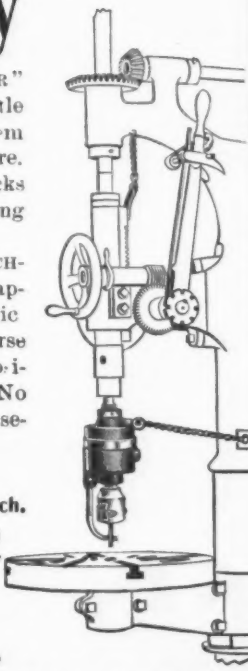
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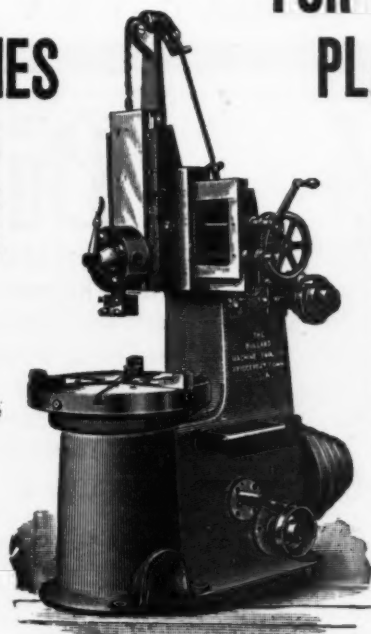
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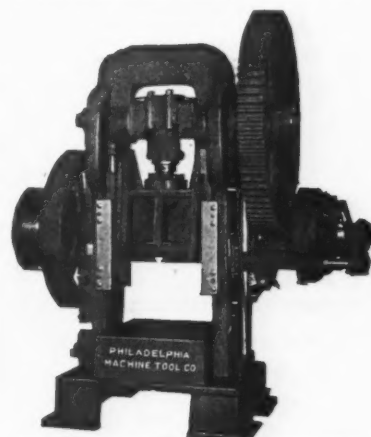
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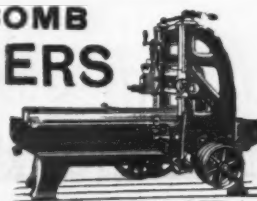
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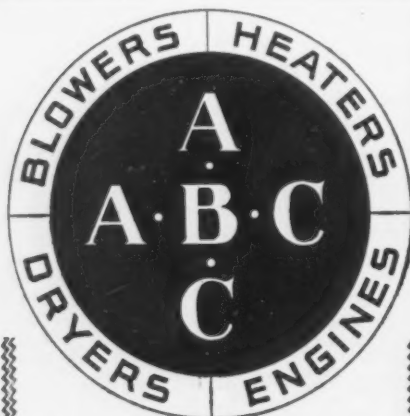
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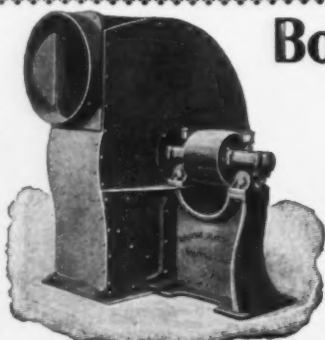
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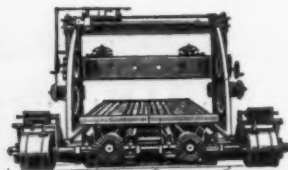
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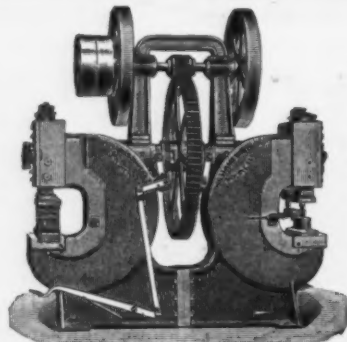
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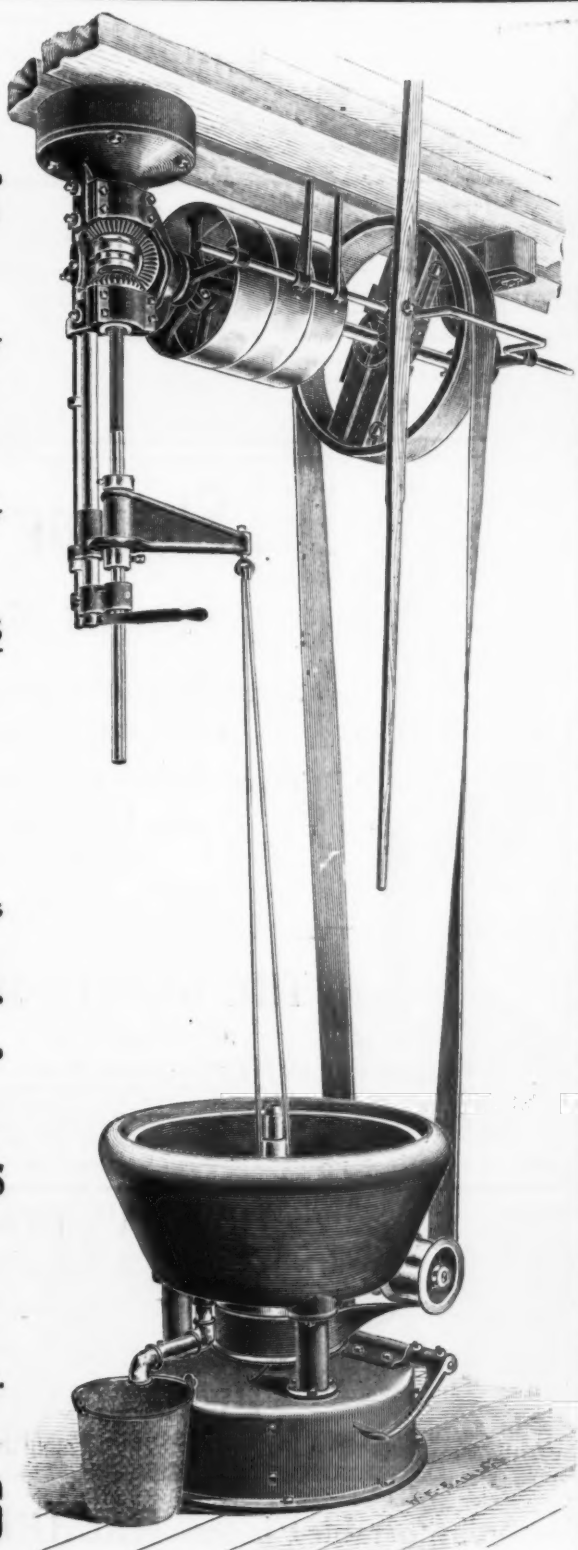
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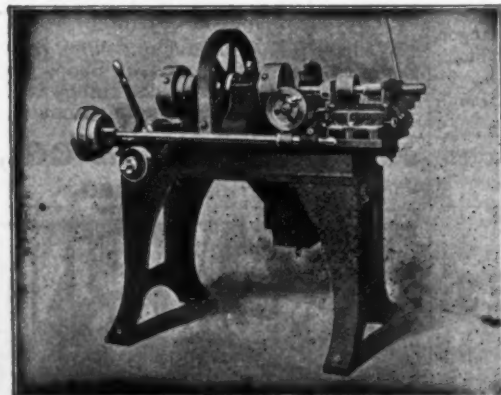
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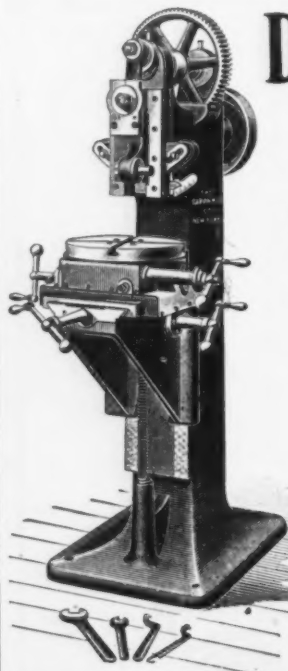


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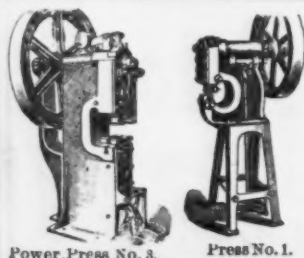
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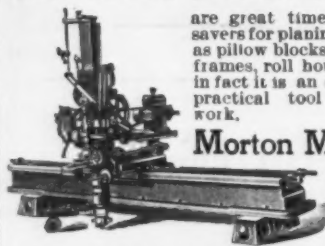
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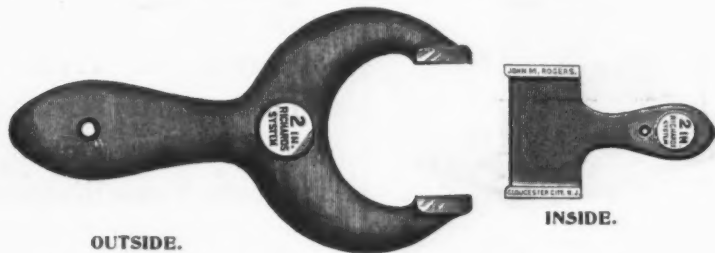
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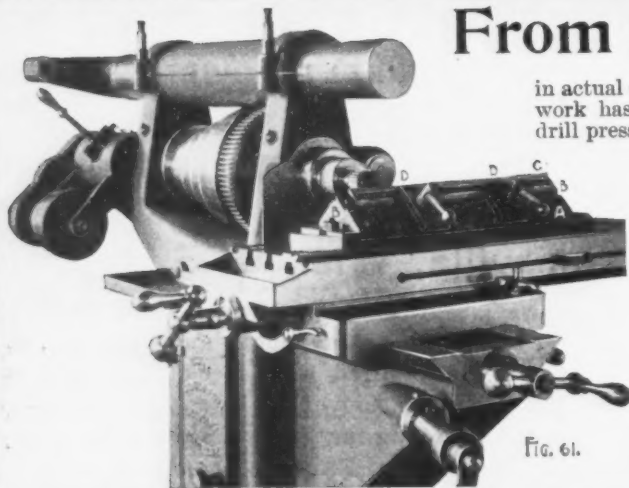


FIG. 61.

To avoid a very unsatisfactory operation on the planer, the jig shown in illustration was devised for milling the angle on edges of taper gibs. This jig is simply an angle, A, with a recess, B, B, in it to hold the gib at the proper angle. Two clamping screws, D, D, are used to hold the gib on the angle.

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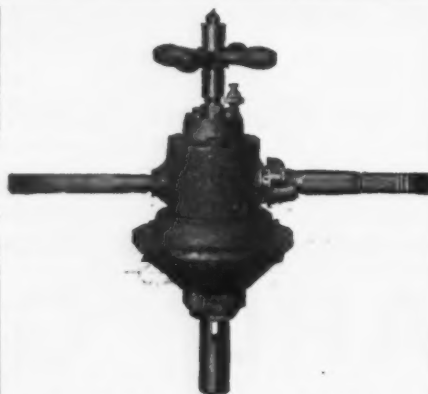
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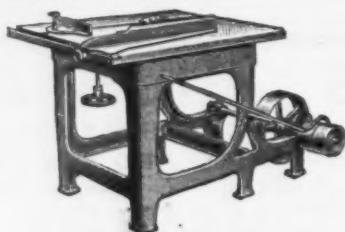
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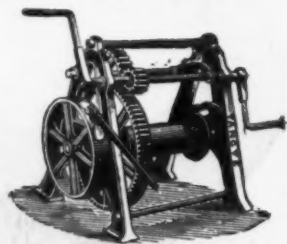
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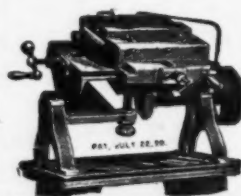


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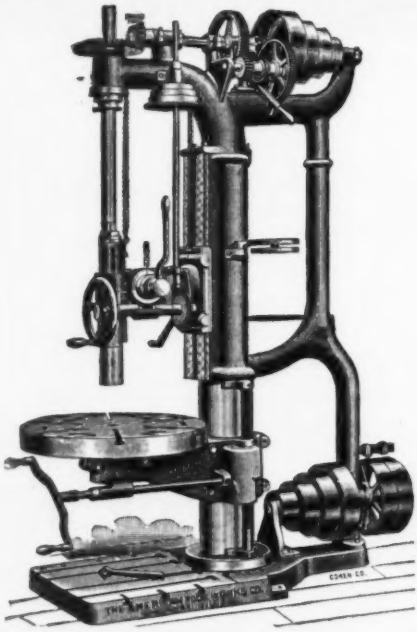
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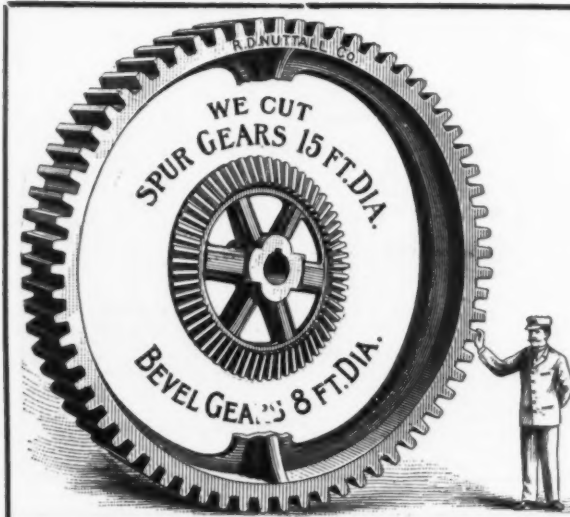
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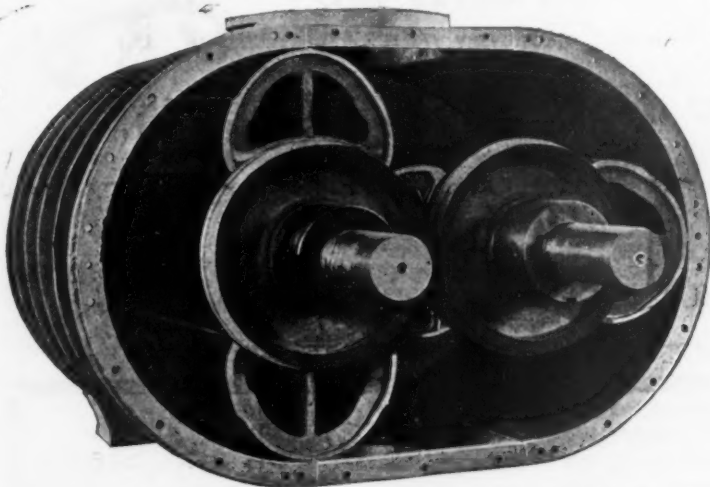
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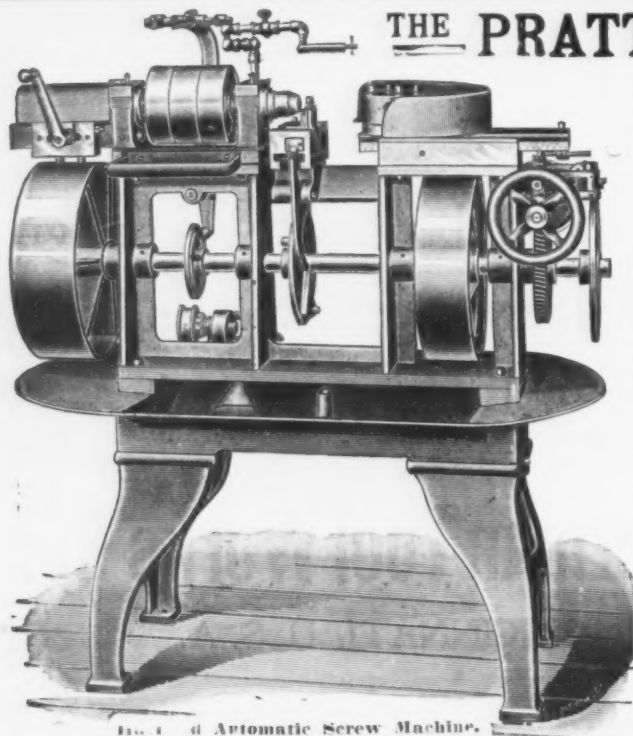


Fig. 4 Automatic Screw Machine.

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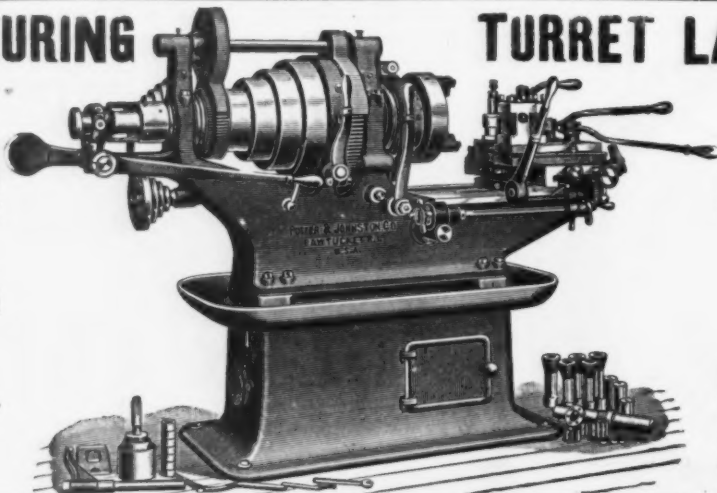
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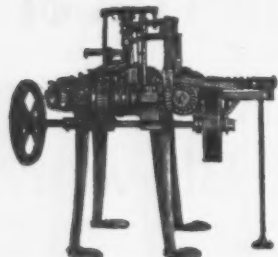


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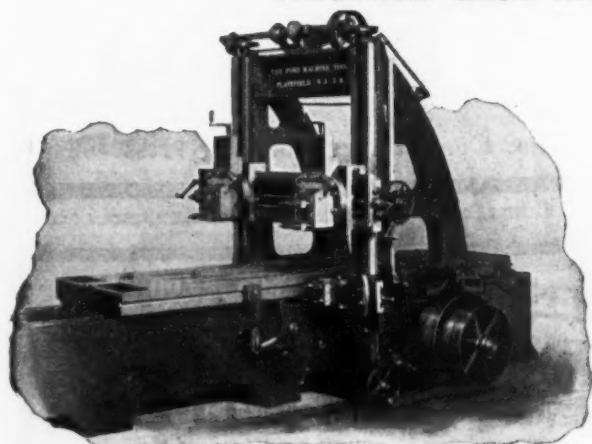
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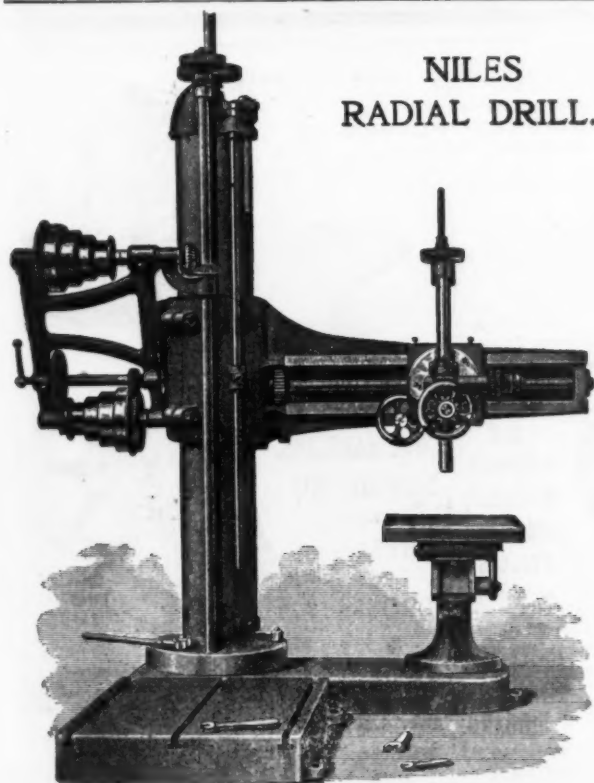
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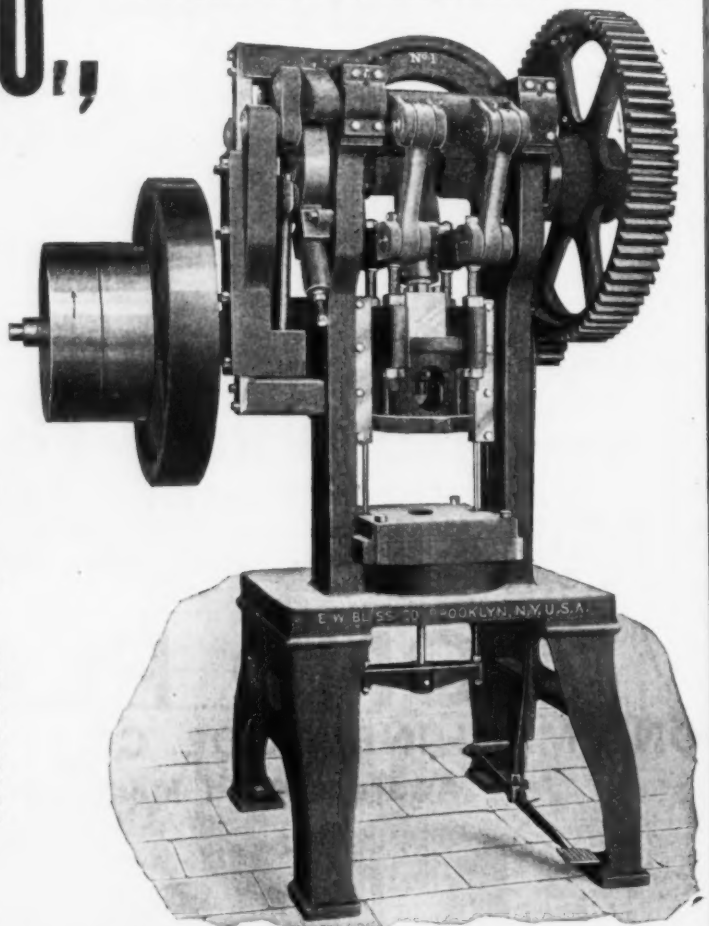
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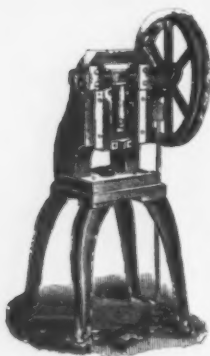
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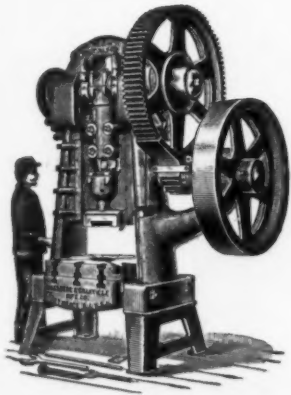
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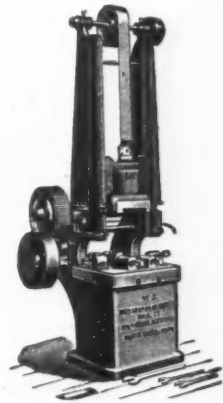
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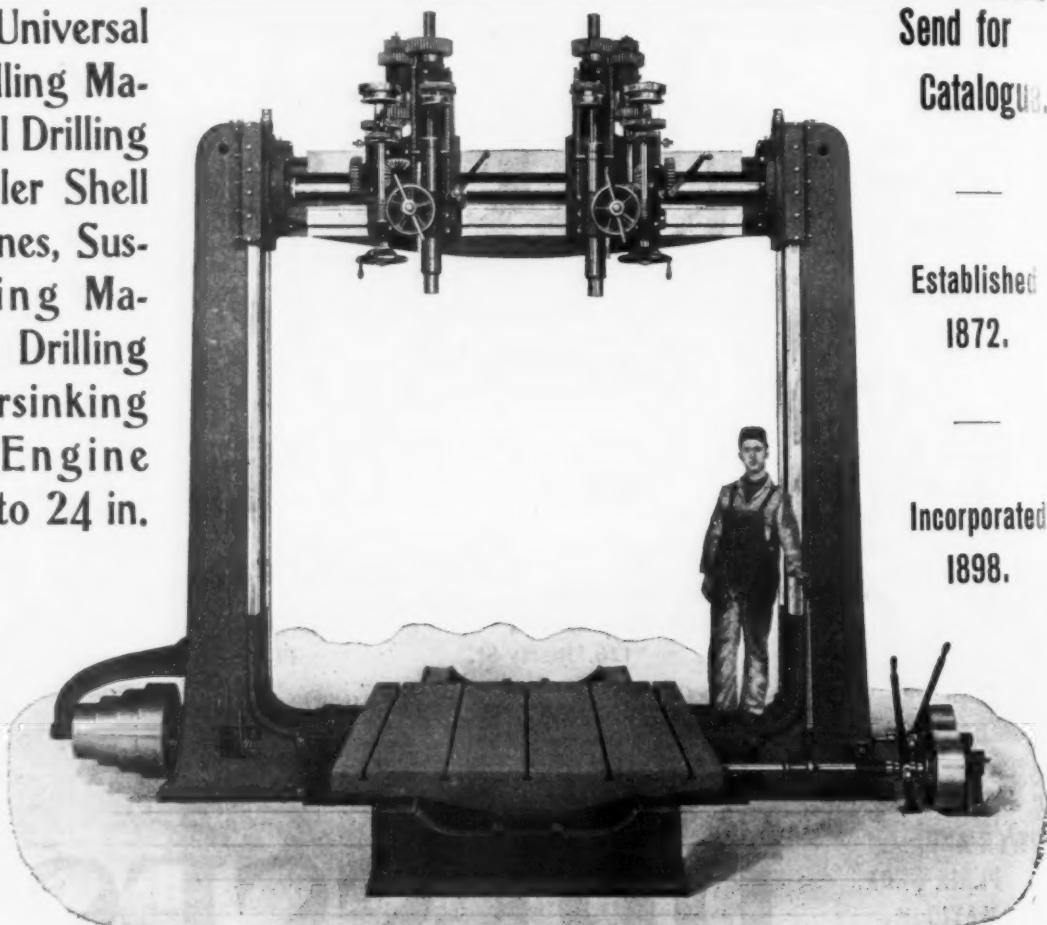
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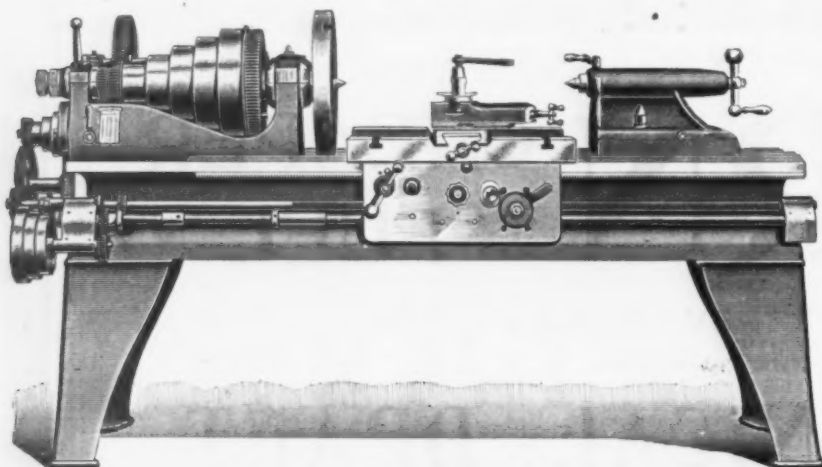
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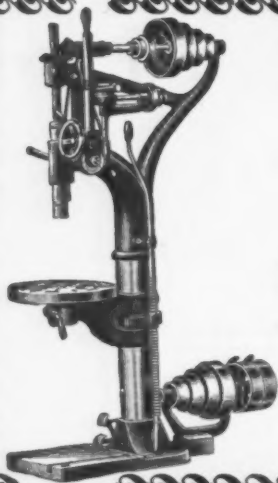
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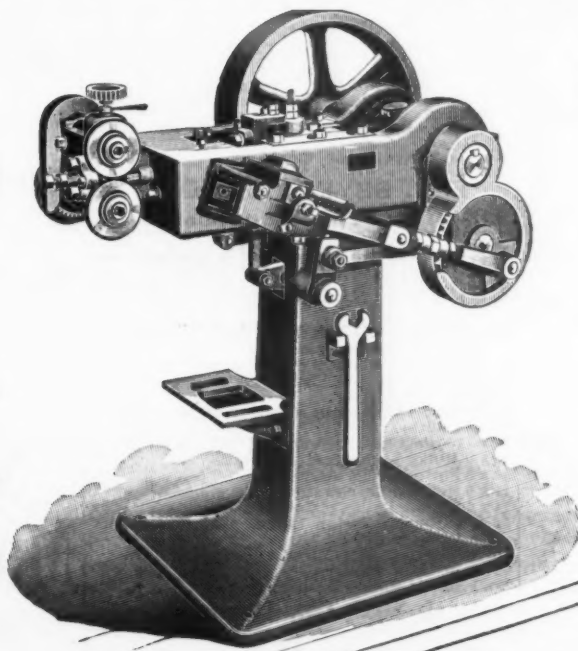
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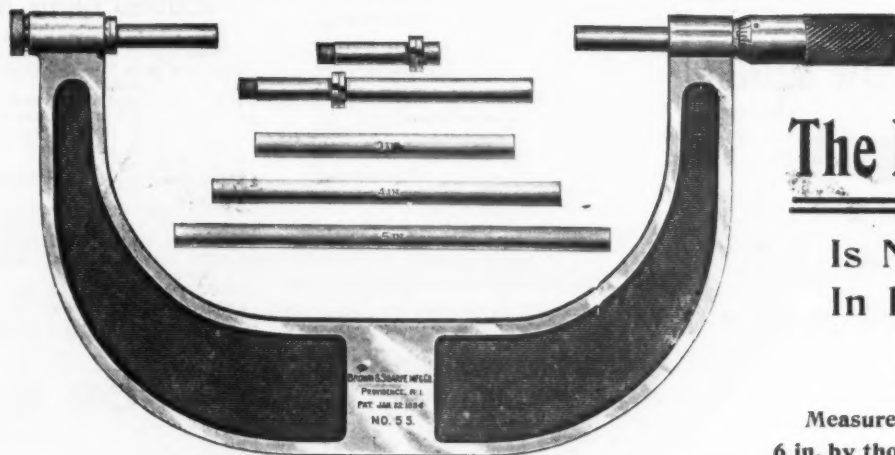
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20 in. x 42 in. Harris-Corliss engine.  
20 in. x 40 in. Putnam four valve auto. engine.  
20 in. x 48 in. Wetherill-Corliss engine.  
20 in. x 48 in. Wheelock-Corliss engine.  
18 in. x 48 in. Atlas-Corliss engine.  
18 in. x 42 in. Hamilton-Corliss engine.  
24 ft. Sectional Fly Wheel, weight 29 1/2 tons.  
18 ft. Sectional Fly Wheel, weight 20 tons.  
6 in. x 8 1/2 in. x 10 in. Worthington duplex condenser.  
5 in. x 7 in. x 10 in. Worthington duplex condenser.  
10 in. x 18 in. x 24 in. Titusville air compressor.  
10 in. x 18 in. x 18 in. Titusville air compressor.  
2 75 tons Wetherill-Corliss ice machines.  
Send for complete list.

**WICKES BROTHERS, Saginaw, Mich.**  
Branch Office and Warehouse: Cor. 45th St. and A. V. R.L., Pittsburg, Pa.

## FOR SALE. IMMEDIATE DELIVERY.

One 18 in.-34 in. x 48 in. Fitchburg Tandem Compound Automatic Engine.  
One 16 1/2 in.-34 in. x 48 in. Cross Compound Fitchburg Automatic.  
One 28 in. x 48 in. Corliss Engine.  
One 26 in. x 60 in. Corliss Engine.  
One 26 in. x 48 in. Greene Engine.  
One 18 in.-30 in. x 16 in. Westinghouse Compound.  
One 22 in. x 42 in. Putnam Engine.  
One 20 in. x 42 in. Greene Engine.  
Two 14 in.-28 in. x 28 in. Cross Compound Fitchburg.  
One 18 in.-20 in. x 14 in. Ideal Compound.  
Two 13 in.-22 in. x 18 in. Westinghouse Compound.  
One 14 in. x 14 in. Armstrong & Sims.  
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Several 50 to 250 H. P. high speed Automatic Engines.  
Two 250 H. P. Babcock & Wilcox Boilers.  
Two 100 H. P. National Water Tube Boilers.  
One 50 H. P. Babcock & Wilcox Boiler.  
Six 125 H. P. Horizontal Tubular Boilers.  
Four 125 H. P. Vertical Boilers.  
One 100 H. P. Vertical Boiler.  
Several 40, 60, 80 to 100 H. P. Boilers.  
Several 30, 25, 30, 40, 75 H. P. Locomotive Boilers.  
5 to 50 H. P. Vertical Boilers.  
Large stock of new Machinery ready for immediate delivery: Steam and Centrifugal Pumps; Lathes, Planers, Shapers, Drills, Milling Machines, Radial Drills, Punches, Shears, Dynamoes, Motors, etc.  
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1 32 x 60 inch Wetherill R. H. Corliss Engine.  
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One 37 in. x 37 in x 8 ft. "Harrisburg Fdy. & M. Co." Planer.  
One 38 x 24 x 14 ft. "Cove" Planer.  
One 26 in. x 26 in. x 6 ft. New York Steam E. Co. Planer.  
One 22 in. Prentiss Shaper.  
One 42 in. x 24 ft. Engine Lathe. H. F. & M. Co.  
One 36 in. x 10 ft. Engine Lathe. H. F. & M. Co.  
One 30 in. x 14 1/2 ft. Engine Lathe. H. F. & M. Co.  
One 24 in. x 22 ft. Engine Lathe. N. Y. S. E. Co.  
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One 36 in. "Alfred Box" Radial Drill Press.  
One Hydraulic 40-in. Wheel Press. 130 tons capacity.  
One Hillis & Jones Punch and Shears, 20-in. throat.  
Several Travelling and Jib Cranes.

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Richards open side Planer and Shaper, planes 8 ft. long, 25 in. wide, 24 in. high.  
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15 in. Hendey Shaper.  
36 in. Snyder Drill, with revolving table and 24 in. Chuck fitted.  
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18 x 6 Muller Lathe, compound rest.  
14 x 8 Porter Lathe, elevating rest.  
14 x 6 Reed Lathe, elevating rest.  
14 x 6 Flatner Lathe, plain rest.  
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25 lb. Justice Hammer.  
No. 1 Slate's Milling Machine.

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CLAYTON DUPLEX, 14 in. x 14 in. x 15 in., in good condition, ready for service.  
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1 22 x 40 x 48 Wright Cross Comp. with condenser.  
1 75 horse, 60, 40 and 30 H.P. Engines.

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1 100 horse Horiz. Tubular, manhole under tubes.  
1 75 " " " "

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2 100 K. W. Direct Connected, used at Waldorf Hotel.  
1 50 " " " "  
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1 Woodward & Rogers 4 Spindle Drill.  
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1 54 in. x 54 in. x 30 ft. 4 Head Planer.  
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1 30 in. x 30 in. x 8 ft. Planer, A1.  
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2 600 lbs. Merrill Drop.  
1 Combined Punch and shear, cuts and punches 1 1/2 in.  
1 Sand blast outfit, complete.  
1 150 lb. Merrell Air Cushioned Hammer.  
1 6 ft. 6 in. Gap, 50 ton Hydraulic Riveter.  
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36 in. x 72 in. Corliss Engine, 50-ton Wheel.  
32 in. x 60 in. " " 30 " "  
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Surface Condensers.  
Jet Condensers.  
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15 in. x 16 in. " "  
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14 in. x 16 in. Straight Line Engine.  
12 in. x 12 in. Ball & Wood Engine.  
10 1/2 in. x 12 in. Armstrong & Sims Engine.  
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140 lb. Bench Drop.

Large stock new machines. Prices on application.

Two 20-ton Hand Traveling Cranes, 58 ft. 10 in. span.

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### Mill and Contractors' Machinery.

1 25 ton Morgan Square Shaft 50 ft. span traveling crane.  
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A full line of New Engines, Hoisting Engines, Shears, Grinding Pans, Stone Crushers and Contractors' Machinery.

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12 Plain Vertical Engines, 5 to 50 H. P.  
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Automatic Engines, 3 to 300 H. P.  
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Simplicity, strength and highest efficiency.  
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Full line Machine Tools and Wood Working Machinery.  
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## Special Bargains.

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1 25 in. x 12 ft. 8 in. Sellers Lathe, triple geared.  
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1 14 in. and 24 in. x 14 in. x 18 in. Worthington Comp'd Condensing Duplex.  
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ONE 150 HORSE POWER

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With all fixtures and fittings.

Hartford inspection allows 125 steam pressure.

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Two 44 x 16 Boilers, thirty 4 in. flues, new fronts, all fixtures and trimmings. Allowed 100 pounds pressure.

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Eight 60 x 16 Horizontal Steel Tubular Boilers, complete, a bargain.  
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These two engines, outside of a few ordinary repairs incident to a long blast, are in good condition. Apply to

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150 LB.

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The above Hammer is in first-class condition. Price \$325 spot cash. Full particulars of  
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2 Eaton and Prince Passenger and Freight Elevators.

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Machinery bought, sold and erected.  
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6 ft arm Bickford plain Radial Drill, new.  
5 ft arm Bickford ditto, with tapping attach., new.  
No. 0 3 ft. arm Bickford plain Radial, with tapping attach., new.  
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28, 32 and 36 in. Cincinnati upright drills, B. G. & P. F., new.  
63 x 23 Field trip grd. Eng. Lathe, new.  
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42 x 16 & 18 ft. Lodge & Shipley Lathes, new.  
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31½ x 12 & 16 ft. Davis Lathes, new.  
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25 x 10, 12 & 16 ft. Davis Lathes, new.  
Eng. Lathes, 9 to 24 in. swings, different makes, new.  
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16 x 14 Field Engine Lathe, fine order.  
42 x 36 x 12 ft. Cincinnati Planer, 2 hds., new.  
36 x 30 x 8 Cincinnati ditto, new.  
33 x 33 x 10 Cincinnati ditto, new.  
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48 x 48 x 12 Putnam planer, fine order.  
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One 16 in. x 36 in. Wetherill Corliss Engine, practically new.  
Large stock of Corliss, Automatic and Plain Slide Valve Engines.  
Horizontal and Vertical Boilers, all sizes and descriptions.  
Let us know your needs.  
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2 1 in. Wire Feed Screw Machines.  
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1 Foot Lathe.  
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Complete shop containing following tools, all in fine condition; will sell as a whole or separately.  
No. 2 Cinn. Universal Milling Machine and Tools.  
14 x 7 Hendey-Norton Lathe, taper and compound rest.  
16 x 8 Porter Lathe.  
5 Hand Screw Machines.  
3 Automatic Screw Machines.  
C 2 and C 4 Ferracute Presses.  
1 No. 1 R. & K. Press.  
6 small presses.  
Grinders, Buffing Lathes, etc.

Address "SHOP TOOLS,"

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Tools lately in use in Boiler Manuf'g Plant.

1 40-ton 36 in. Gap Hydraulic Portable Riveter.  
1 set 20 ft. Niles rolls.  
1 13 in. x 22 in. x 13 in. Westinghouse Engine  
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For additional information, address

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Second-hand Steam Engines, Boilers and Pumps. Large variety of sizes and makers.  
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## EXCEPTIONAL BARGAINS.

445 K. W. Edison, Bi-polar, 110 volt dynamos.  
1 New 40 K. W. Stanley, two phase, 2000 volt alternator.  
1 400 ampere hour, Chloride Accumulator Co. storage battery.  
1 15 x 14 Ideal engine  
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2 18½ x 18 Ideal engines  
1 20 x 36 x 18 Ideal cross compound engine.  
1 7½ x 5 x 6 Duplex feed pump.  
1 1000 H. P. Austin open heater.

Write for our latest price list No. 41.

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42 inch Schellenback Pulley Lathe, Bores and turns simultaneously.  
1 Newton Facing and Milling Lathe.  
1 30 inch x 16 foot Triple geared Sellers Lathe.  
1 84 inch x 28 foot Triple geared Bement Miles Lathe.  
1 30 inch x 16 foot Fifield Lathe.  
1 32 in. x 32 in. x 8 ft. New Haven Planer.  
1 43 in. x 42 in. x 14 ft. Gray Planer.  
14 in. Lodge & Davis Shaper.

Write us your wants

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## For Immediate Delivery.

Engine Lathes, 10 in. to 32 in. swing.  
Speed Lathes, 10 in. to 20 in. swing.  
Shapers, 10 in. to 26 in. stroke.  
Planers, 20 in. to 34 in.  
Drill Presses, 10 in. to 28 in.  
Milling Machines, Hand and Power.  
Screw Machines and Monitor Lathes up to 20 in.  
Feed and Power Presses, a variety of sizes.  
Drop Hammers with and without automatic lifts.  
Hurlburt & Rogers Cutting-off Machines.

Send for catalogue of Presses.

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## Hoisting Engines?

We have fifteen smaller and medium sized Single, Double and Four Drum Engines in stock. Steam and Centrifugal Pumps? Twenty-four various sizes and makes.

Lidgerwood Cableway, 1,000 ft. span.  
Boiler and Three Drum Engine.  
¾ yard Little Giant Steam Shovel.  
27 ¼ yard Western Dump Cars.  
¾ yard four-part Clam Shell.  
125, 99, 70, 60, 55, 50, 40, 35, 30, 25 and smaller Portable, Vertical and Horizontal Boilers.  
225 pound Steam Hammer.  
300 Light Dynamo and Engine.  
14 x 42 Cooper Corliss Engine.  
14 x 24 Carlin Engine, and others.

**CARLIN MACHINERY & SUPPLY CO.,**

JOHN H. CARLIN, Prop.,

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## WANTED.

One second-hand 10 in. Slotting Machine.

One second-hand Up-Setting Machine with 1½ to 2 in. capacity.

One second-hand Engine Lathe, 40 to 44 in. swing x 18 ft. 6 in. between centers, screw or rod feed.

One second-hand 24 to 30 in. x 20 ft. centers, modern Screw Cutting Engine Lathe.

Address BOX 1567,

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### LATHES.

3 12 x 4 Speed.  
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1 14 x 4 ft. 6 in. Putnam.  
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1 16 x 6 Pratt & Whitney.  
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1 16 x 6 Harrington.  
1 16 x 8 Somers.  
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1 18 x 6 Fuller.  
2 18 x 6 Pratt & W., plain.  
1 18 x 7 Pratt & W., plain.  
1 18 x 8 Pratt & W.  
1 18 x 10 Am. T. & M. Co.  
1 20 x 7 Pratt & W., plain.  
1 20 x 8 McMahon.  
1 20 x 8 Stover.  
1 21 x 8 Bullard.  
3 20 x 10 B's 'pt Chucking.  
1 21 x 8 Dustin & Hubbard.  
1 22 x 12 Fifield.  
1 26 x 12 Lathe & Morse.  
1 30 x 16 Fifield.  
1 32 x 14 Pond.  
1 B'ment Single Axle Lathe

### PLANERS.

1 18½ x 14½ x 43 Ames Screw  
1 26 x 26 x 6 N. Y. S. Eng. Co.  
1 60 x 60 x 20 Fitchburg.  
1 14 ft. 6 in. Sellers Plate.

### DRILLS.

1 10 in. Bench, York.  
1 3-spindle Ames.  
1 3-spindle Garvin.  
1 20 in. Prentice, lever feed  
1 25 in. Weeks & Halsey.  
1 Bement & D. Upright.

### SHAPERS.

1 9 in. Crank, Bement.  
1 12 in. Crank, Juengst  
2 15 in. Frick, Hendey.  
1 16 in. Frick, Putnam.  
1 20 in. Frick, Juengst.

If you want to buy or sell let us know.

Send for Special List.

**MANNING, MAXWELL & MOORE,**  
85-87-89 Liberty St., N. Y. City.

Branches at Chicago, Pittsburgh and Cleveland.

## Second-hand Engines, Boilers, Iron and Wood Working Machinery FOR IMMEDIATE DELIVERY.

1 2 H.-P. Bryant Oil Engine, good order and complete.  
1 3 H.-P. Spencerport Vertical Engine and Boiler combined, fair order.  
1 10 H.-P. O. & S. Vertical Engine, nearly new.  
1 7 x 8 Vertical Engine, fair order, price low.  
1 9 x 9 Vertical Engine, old style but in good order.  
1 Triplex Boat Engine, with oscillating cylinder, good order.  
1 10 x 12 Tift Engine, fair order.  
1 50 in. Clement Back Knife Lathe, used 30 days.  
1 10 in. 4-side Houston Moulder, good as new.  
1 24 in. Wood Frame Planer and Matcher, fair order, price low.  
1 Houston Mortiser, good as new.  
1 36 in. Niagara Squaring Shear, in prime order.  
1 3000 lb. Graves Elevator Drum, thoroughly overhauled.  
1 45 in. Buffalo Pressure Blower, good as new.  
1 72 in. Sturtevant Blower and Large Coil Heater, in A No. 1 order.  
1 18 in. 7-hole Turret Head, with carriage, good order.  
1 No. 3 Stiles & Parker Power Punch, good working order.  
1 16 x 6 Blaisdell Lathe, B. G. Screw and Rod Feed, fair order.  
1 13 x 6 Brass Workers' Lathe, good working order.

For further particulars address

**THE W. P. DAVIS MACHINE CO.,**

126, 128, 130 Mill St.,

**ROCHESTER, N. Y.**

## Blooming Mill Engines For Sale.

A pair of Reversing Engines, 28 x 48, with countershaft and extra heavy gear wheels in steel, all set in massive box b-d plates; built by Mackintosh, Hemphill & Company, and used about four years; bloomed six hundred tons of four inch billets per day from 16 in. x 18 in. ingots. Well adapted for an open hearth plant; are in good condition. Apply to

**OLIVER & SNYDER STEEL COMPANY,**

Pittsburgh, Pa.



## INVESTMENTS

Are offered by J. H. Hillman & Son, Empire Building, Pittsburg, Pa., in the following first-class properties:

### BLAST FURNACES IN PENNSYLVANIA.

No. 1, capacity 300 tons daily, now running, making over \$5 per ton profit. Can be turned over promptly. Will pay half the cost this year.  
No. 2, capacity 200 tons daily, now running with big profit.

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Ready for operation August 1st.

### TWO HUNDRED COKE OVENS AND Five Thousand Acres of Coal Lands in West Virginia.

### FIFTY COKE OVENS AND COAL Lands on the Main Line of Pennsylvania Railroad.

### CONNELLSVILLE COAL LANDS and Coke Ovens.

### EIGHTY COKE OVENS AND CONNELLSVILLE coal in Connelville region.

### FIFTY THOUSAND ACRES OF COALING coal adjoining Connelville region. Nine foot vein in Fayette and Greene Counties, Pa. These lands offer the best investments now before the American public.

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Capacity 25,000 tons per annum. Now shipping East and West. Modern electric equipment. Coal is like Pocahontas smokeless used in the United States Navy. Being exported.

### FIFTY THOUSAND ACRES OF KENTUCKY Coal and Timber Land. At a low price.

### WELL-KNOWN IRON PROPERTY IN Kentucky

With well-developed ore mines and millions of tons of ore in sight and has also a large number of farms on the Cumberland and Tennessee Rivers. This property contains 40,000 acres and is a principality in itself.

### MANUFACTURING PROPERTY IN the Monongahela Valley.

### THICK VEIN COAL IN THE MONONGAHELA Valley.

In the 3d, 4th, 5th, 6th and 7th pools of the Monongahela River.

### SOMERSET COUNTY COAL LANDS.

In tracts of five, ten, twelve and seventeen thousand acres each, are cheap and are being sold rapidly to Eastern capitalists.

### MANUFACTURING SITE AND COAL Lands on the Allegheny River.

On the Allegheny Valley Railroad is splendid property capable of prompt development.

### CANADIAN IRON ORE MINES IN Operation.

### A MODERN ROLLING MILL.

### MANUFACTURING PROPERTIES and sites in Pittsburg and Allegheny Cities, Pa.

### FIFTEEN THOUSAND ACRES OF coal in Centre and Clinton Counties, Pa., on the Beech Creek Railroad, suitable for shipment East.

### TEN THOUSAND ACRES OF COAL on the main line of the Pennsylvania Railroad, containing four veins of coal, mostly above water. John Fulton, Mining Engineer of Johnstown, Pa., estimates over 80,000,000 tons of coal on this property. Will be sold cheap to a prompt buyer.

### A FIRST-CLASS CHARCOAL BLAST Furnace.

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**J. H. HILLMAN & SON,**

Empire Building,  
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## BLOWER BARGAINS.

ROOTS', second hand, bought, sold or exchanged.

All my blowers are overhauled by expert blower machinists.

I do not advertise a "fake" list of blowers not in my possession; my stock is constantly changing.

Write for particulars and prices.

**H. M. PAPWORTH,**

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### FOR SALE.

18 ton Yale & Towne Standard Gauge Locomotive Crane  
W. J. CARLIN COMPANY,  
610-611 Lewis Bldg., Pittsburg, Pa.  
NEW YORK OFFICE,  
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## NEW TOOLS

FOR IMMEDIATE SHIPMENT.

30 in. Bullard Swivel Head Turret Mill.  
37 in. Bullard Mill, two heads.  
42 in. Bullard Swivel Head Turret Mill.  
76 in. Bullard Mill, two heads.  
30 in. x 30 in. x 8 ft. Pond Planer, new pattern.  
36 in. x 36 in. x 10 ft. Cincinnati Planer, two heads.  
36 in. x 36 in. x 14 ft. Cincinnati Planer, two heads.  
46 in. x 42 in. x 12 ft. Betts Planer, two heads.  
40 in. x 17 ft. Triple Geared Fish Engine Lathe.  
No. 2 Bickford Radial Drill, plain.  
No. 3 Bickford Radial Drill, plain.  
No. 3 Bickford Radial Drill, full Universal.  
No. 2 Cincinnati Plain Back Geared Milling Machine.  
No. 3 Cincinnati Plain Back Geared Milling Machine.  
No. 3 Cincinnati Full Universal Milling Machine.  
33 in. Gould & Eberhardt "Victoria" Pattern Gear Cutter.  
42 in. Gould & Eberhardt "Victoria" Pattern Gear Cutter.  
24 in. Gould & Eberhardt Extension Base Shaper.  
26 in. Gould & Eberhardt Extension Base Shaper.  
Send for our new catalogue.  
Send for our list of Second-hand Machinery.

**MARSHALL & HUSCHART MACHINERY CO.,**

62-64 S. Canal St., Chicago, Ill.

**19 S. Water St., Cleveland, O.**

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Two in. Rotary Pump. Douglas 1 1/4 in. feed Power Pump. Douglas 1 1/4 in. feed Power or Hand Pump. 7 in. x 8 in. Gould Triplex Power Pump. 4 in. x 5 in. Baldwinville Power Pump. No. 5 Acme Valley Pump. No. 2 Acme Valley Pump. Hall Air Pump. 5 in. x 7 in. Cylinder. Knowles Duplex Pump and Receiver, cylinder 4 1/4 in. x 2 1/4 in. x 4 in. Valley Duplex Steam, cylinder 3 1/4 in. x 3 in. x 5 in. Dean No. 2 Steam Cylinder. Knowl's Steam Cylinder. Ames Steam Cylinder. Write for list.

HANNAN & FINTON, Springfield, Mass.

## THE Thomas & Lowe Mch. Co.,

DEALERS IN

## New and Second-Hand Machinery PROVIDENCE, R. I.

### SECOND-HAND MACHINERY

AT SACRIFICE PRICES.

One 50 H. P. Westinghouse Compound Engine, \$350. One 35 Arc Light, T. H. Dynamo, \$250. Two 75 H. P. Horizontal Tubular Boilers, each, \$250. One Henry Martin Brick Machine, 25,000 cap., \$300. One Newton Sander (for brick works), \$100. One 20-ton Howe R. R. Track Scale, \$100. One No. 4 Delamater Steam Pump, 5 in. suc., 3 1/2 in. dis., \$100. One Cameron Steam Pump, 4 in. suc., 3 in. dis., \$50.

**SCHULTZ & CO.,**

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## FOR SALE.

1 Marion Shovel, 3/4 yd., 1 1/4 yd.  
1 Southern Steam Shovel, 1 1/4 yd.  
1 8 1/4 in. x 10 in. Lidgerwood Hoisting Engine.  
8 McMyler Revolving Derricks.  
28 Flat Cars, 40 and 50 capacity.  
1 Gates Rock Crusher. Also two others.  
1 Porter 15 ton Locomotive.  
1 30 ton Standard Gauge Locomotive.  
STANDARD MACHINERY AND EQUIPMENT CO.,  
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SECOND-HAND

## Double Spindle Lathe.

26-44 in. swing, 14 ft. bed complete good order, replaced with one of the larger size, new pattern.

**J. J. McCabe, 14 Dey Street, N. Y.**

D

## BARGAINS.

Immediate Delivery.

1 43 in. x 8 ft. Ingersoll Slab Milling Machine, second hand, fine condition. Photo, etc., on application.

1 32 in. x 32 in. x 10 ft. Lodge & Davis Planer, in fine order.

1 No. 4 Williams & White Bulldozer, fine order.

3 2 in. Cleveland Aut. Screw Machines.

Pratt & Whitney and B. & O. Hub Machines.

**McDOWELL, STOCKER & CO.,**

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### For Sale-Bargains.

50 H. P. Horizontal Tubular Boilers, guaranteed.....\$225  
14 x 20 Slide Valve Engine.....200  
Belt Power Elevator and Platform.....125  
300 H. Austin Feed Water Heater.....120  
100 H. Receiving Tank, 150 lbs. test.....60  
18 x 6 "New Haven" Lathe.....85  
36 in. "Stevens" Pulley Lathe.....75  
60 in. "Huyett & Smith" Ventilating Fan.....40  
10 H. P. Upright Side Crank Engine, new.....70  
15 H. Submerged Fine Upright Boiler.....18  
No. 3 "Starveant" Blower.....12  
No. 1 "Starveant" Blower, new.....12  
State Sensitive Drill and Chuck.....25  
20 in. x 20 in. x 4 feet Iron Planer, not complete.....80  
12 H. P. Kimble Automatic Upright C. C. Engine.....80  
10 H. "Erie City" Upright Boiler, complete.....75  
15 H. Upright Boiler, complete with fittings.....80  
4 ft. x 15 in. Planer Chuck, heavy.....15  
12 in. Upright Drill.....15  
10 H. Sterling Charter Gas Engine.....200  
Wire Straightener.....10  
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Berryman Heater, 24 in. x 100 in., almost new.....100  
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## PARTIAL LIST OF SECOND-HAND MACHINERY IN STOCK.

1 60 H. P. 54 in. x 16 ft. Tubular Boiler.  
2 80 H. P. 60 in. x 16 ft. Tubular Boilers.  
2 125 H. P. 66 x 18 Tubular Boilers.  
1 100 H. P. Locomotive Boiler.  
1 100 H. P. Baker Automatic 14 x 30.  
1 100 H. P. A. H. Automatic Engine.  
1 150 Buckeye Automatic Engine, size 16 x 18.  
1 125 Buckeye Automatic Engine, size 14 x 16.  
1 100 H. P. Ball Automatic Engine, size 18 x 12.  
1 80 H. P. 8 x 10 Payne Auto. Engine.  
2 No. 6 Morris Centrifugal Sand Pumps.  
1 12 x 12 x 10 Worthington Duplex Pump.  
1 7 x 4 1/2 x 10 Worthington Duplex Pump.  
1 Deane Duplex Power Pump, 5 in. plungers.  
1 No. 7 Cook and Chick Single Pump.  
1 200 H. P. Berryman Feed Water Heater.

**RAINIER & WILLIAMS,**

64 So. Canal Street, Chicago, Ill.

## Rolling Mill Engines

2 40 in. x 72 in. International Power Co. Corliss Engines. Shafts 20 in. dia., 8 ft. between center of bearings. Wheels 24 in. dia., 50 ton. 1 Right hand, 1 Left hand.

1 18 in. & 30 in. x 16 in. Westinghouse comp'd.  
3 16 in. & 27 in. x 16 in. Westinghouse comp'd.  
1 24 in. & 38 in. x 60 in. Tandem, Allis, Tangye frame  
1 26 in. x 48 in. Allis Corliss, Right hand, condensing. Wheel 18 ft. dia., 32 in. face.  
1 16 1/2 in. x 25 in. x 15 in., Cross Compd. Armington & Sims  
1 11 in. and 19 in. x 24 in. Tandem Compd., Buckeye.  
1 16 in. x 42 in. Allis Corliss.  
1 10 in. x 12 in. Watertown Automatic.  
1 12 in. x 13 in. N. Y. Safety  
1 18 in. x 15 in. McIntosh-Seymour Automatic.  
2 13 in. x 14 in. Watertown  
1 14 in. x 13 in. Armington & Sims  
1 15 1/2 in. x 16 in. N. Y. Safety  
4 16 in. x 16 in. Ball  
2 16 in. x 16 in. Cooper  
1 18 1/2 in. x 18 in. McIntosh-Seymour

### BOILERS.

2 375 H. P. Sterling Water Tubes for 150 lbs.  
2 175 H. P. " " " " " "  
2 200 H. P. National " " " " " "  
3 72 in. x 16 ft. Return Tubulars " 120 "  
2 72 in. x 20 ft. " " " " " "

### CONDENSERS.

2 600 H. P. Snow Condensers.  
1 1000 H. P. Nordberg Condenser.  
3 325 H. P. Davidson Condensers.

## Rossiter, MacGovern & Co.,

Electrical and Steam Machinery.

141 BROADWAY, N. Y. Factory, Brooklyn.

SEND FOR CATALOG.



36 x 72 Providence Corliss.  
30 x 72 Hamilton Corliss.  
30 x 72 Harris Condensing Corliss.  
30 x 60 Fraser and Chalmers' Corliss.  
26 x 48 Hamilton Corliss.  
24 x 48 Hamilton Corliss.  
20 x 42 Hamilton Corliss.  
18 x 42 Harris Corliss.  
16 x 42 Bullock Corliss.  
15 x 24 Watertown Automatic.  
14 x 30 Cummer 4 valve Automatic.  
13 x 26 Buckeye Automatic.  
13 x 20 Mansfield Slide Valve.  
12 x 12 Slide Valve.  
10 x 12 Slide Valve.

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# Information for Machinery Users.

*We are the largest dealers of rebuilt machinery on Earth.*

*We are not machinery brokers; if you are interested in any of our advertised items you can deal direct with the owners.*

*We only list items actually in our possession.*

Every piece of machinery purchased from us leaves our shops in absolutely perfect condition; every tiny detail having received our careful attention.

*We faithfully guarantee that when it reaches you it is ready to correctly perform its duty.*

## WE OFFER THE FOLLOWING FOR QUICK ACCEPTANCE:

### ENGINES.

No. A 120 6 x 12 Blymer.  
No. A 122 9 x 14 Woodbury.  
No. A 123 7 x 7 slide valve.  
No. A 196 6 x 10 Westinghouse Junior.  
No. A 197 2 1/2 x 8 1/2 side crank.  
No. A 199 8 x 16 Russell Gibbs.  
No. A 200 9 x 14 side crank.  
No. A 204 8 x 14 center crank.  
No. A 206 18 x 28 Nicol, Burr & Co.  
No. A 207 6 x 10 side crank.  
No. A 213 21 x 32 Watertown.  
No. A 214 7 x 10 side crank.  
No. A 215 12 x 20 side crank.  
No. A 217 10 x 14 center crank.  
No. A 270 20 x 24 Erie City.  
No. A 273 12 x 12 Ideal.  
No. A 274 12 x 12 Phoenix Iron Works.  
No. A 275 10 x 14 Wright & Adams.  
No. A 278 9 x 16 link motion.  
No. A 282 5 x 7 side crank.  
No. A 296 6 x 8 Ottumwa Iron Works.  
No. A 306 6 x 12 side crank.  
No. A 309 10 x 18 side crank.  
No. A 316 13 H.-P. Dayton gasoline.  
No. A 318 4 x 3 gasoline.  
No. A 325 12 x 18 side crank.  
No. A 326 8 x 12 Webster, Camp & Lane double cylinder hoisting.  
No. A 355 12 x 16 side crank.  
No. A 357 10 x 14 Surtlee Engine Company.  
No. A 359 16 x 36 patent gear valve motion.  
No. A 371 5 x 9 side crank.  
No. A 376 15 H.-P. Westinghouse Junior.  
No. A 377 14 x 14 Ideal.  
No. A 380 11 x 13 Sinker, Davis & Co.  
No. A 381 12 x 22 Tangye bed automatic.  
No. A 382 4 1/2 x 10 side crank.  
No. A 419 8 x 10 Atlas.  
No. A 438 11 x 18 x 16 McEwen tandem compound.  
No. A 439 10 x 12 Ball automatic.  
No. A 440 9 x 16 Rice automatic.  
No. A 441 16 x 36 Corliss.  
No. A 443 1 double cylinder 50 H.-P. Raymond gasoline.  
No. A 445 10 x 22 side crank.  
No. A 449 3 1/2 x 4 center crank.  
No. A 457 6 x 8 double cylinder hoisting.  
No. A 446 5 x 12 upright.  
No. A 467 2 x 3 upright.  
No. A 600 13 x 18 single valve Russell.  
No. A 601 14 x 20 4 valve Russell.  
No. A 602 1 22 1/2 x 36 Wright automatic Corliss.  
No. A 603 14 x 20 Struthers, Wells & Co.  
No. A 604 10 1/2 x 12 Taylor Beck automatic.  
No. A 608 13 x 22 x 13 two Westinghouse compound.  
No. A 609 17 1/2 x 24 two Williams automatic.  
No. A 466 5 x 12 upright, 12 x 24 inch floor space.  
No. A 352 9 x 14 center crank.  
No. A 349 6 x 8 double engine hoisting.  
No. A 342 15 x 32 side crank.  
No. A 202 8 x 10 elevator double hoisting, with drum.  
No. A 198 1 1/2 x 2 marine type.  
No. A 201 8 H.-P. gasoline.  
No. A 127 8 x 12 automatic side crank.  
No. A 455 Payne automatic compound.  
No. A 476 10 x 24 Greenwall side crank.  
No. A 501 12 x 16 F. C. Wells side crank.  
No. A 482 20 x 30 Poppet valve motion.  
No. A 487 Ten 9 x 12 Tift center crank.  
No. A 479 10 x 20 side crank.  
No. A 480 5 x 12 side crank.  
No. A 486 11 1/2 x 14 center crank.  
No. A 502 Two 8 x 16 side crank.  
No. A 503 16 x 25 side crank.  
No. A 485 10 x 22 side crank.  
No. A 504 6 x 8 side crank.  
No. A 505 6 x 12 side crank.  
No. A 506 7 x 12 Rice aut. Tangye bed.  
No. A 611 8 1/2 x 14 x 12 McEwen tandem.  
No. A 612 5 x 5 marine.  
No. A 613 8 H.-P. Otto gas.  
No. A 614 Two 300 H.-P. Westinghouse auto.

### ELECTRICAL.

No. A 220 15 H.-P. electric motor, Keystone No. 344, with worm gear for hoisting.  
No. A 221 1200-light, Slattery alternator.  
No. A 222 50 K. W. dynamo.  
No. A 223 Two U. S. Westinghouse 80 K. W. generators.  
No. A 224 Hancock inspirator, 1 1/2 inch.  
No. A 225 500-light National dynamo.  
No. A 226 400-light Thom. Houston dynamo.  
No. A 227 500-light Thom. Houston dynamo.  
No. A 228 150-light U. S. Weston dynamo.  
No. A 229 Outfit consisting of 8 1/2 x 14 x 12 McEwen tandem compound engine with 50 K. W. direct connected dynamo and 100 H.-P. Sterling boiler.

### LATHES.

No. A 262 1 10 in. x 4 ft. metal lathe.  
No. A 454 1 16 in. x 6 ft. metal lathe.  
No. A 256 1 20 in. x 7 ft. metal lathe.  
No. A 260 1 14 in. x 5 ft. Pond engine lathe.  
No. A 261 1 16 in. x 5 ft. Ames engine lathe.  
No. A 266 1 20 in. x 4 ft. Franklin plane lathe.  
No. A 259 1 20 in. x 10 ft. Shepard.  
No. A 341 1 16 in. x 6 ft. screw cutting engine lathe.  
No. A 339 2 18 in. x 8 ft. Shepard screw cutting engine lathe.  
No. A 402 2 12 in. x 4 ft. special lathes for brass turning.  
No. A 338 1 tapping lathe with compound gears.  
No. A 310 1 12 in. x 4 ft. Barnes foot power wood turning lathe.  
No. A 363 1 wood turning lathe, 4-step cone pulleys.  
No. A 267 1 special lathe for wood work, 18 in. x 5 ft.  
No. A 264 1 6 in. x 4 ft. speed lathe.  
No. A 401 2 12 in. x 4 ft. 6 in. speed lathes.  
No. A 387 2 12 in. x 5 ft. speed lathes.  
No. A 403 2 14 in. x 5 ft. speed lathes.  
No. A 406 2 16 in. x 4 ft. extra heavy speed lathes.  
No. A 392 1 12 in. swing turret speed lathe.  
No. A 404 1 13 in. swing turret speed lathe.  
No. A 400 1 14 in. swing turret speed lathe.  
No. A 396 5 4 ft. 6 in. bed turret speed lathes.  
No. A 398 2 7 in. x 5 ft. turret lathes.

### STEEL TANKS.

No. A 148 4 60 in. diam. x 4 ft. 6 in. high.  
No. A 144 2 48 in. diam. x 7 ft. high.  
No. A 142 1 30 in. diam. x 4 ft. high.  
No. A 141 1 36 in. diam. x 5 ft. 4 in. high.  
No. A 140 2 66 in. diam. x 5 ft. 2 in. high.  
No. A 138 6 48 in. diam. x 8 ft. high.  
No. A 14 1 42 in. diam. x 14 ft. high.  
No. A 12 1 48 in. diam. x 6 ft. high.  
No. A 11 1 72 in. diam. x 6 ft. high.

### MISCELLANEOUS TOOLS.

No. A 390 Double buffer or polishing stand, 48 in. mandrel.  
No. A 389 Double buffer, 24 in. mandrels.  
No. A 393 Double spindle brass shaper, pulley 6 in. diam., 3 in. face.  
No. A 395 Polisher or buffer.  
No. A 459 Brazing outfit, tank and four burners.  
No. A 173 Rod or bolt tapping machine, thread up to 1 1/2 in.  
No. A 128 6 bolters or rattlers, solid cast iron, 4 ft. long, 24 in. diam.  
No. A 434 1 hydraulic press, 2 x 3 ft., capacity 9 tons.  
No. A 363 1 power drill press, 20 in. swing.  
No. A 370 1 Yankee drill press, 20 in. swing.  
No. A 369 1 hand power post drill press, 20 in. swing.  
No. A 340 1 rod bolt threader up to 1 1/2 in.  
No. A 343 1 Hotchkiss trip hammer, graded to strike 2000 pounds.  
No. A 346 1 cold steel saw, 48 in. diam., with 4 saws.  
No. A 348 1 set of hot rows for angle irons.  
No. A 368 1 double emery stand, 36 in. long.  
No. A 388 1 surface emery grinder, takes in 12 in. wheel.  
No. A 428 1 double arbor buffing or emery grinder.  
No. A 227 3 hand power pipe threading machines, from 1/2 to 2 in.  
No. A 226 1 pulley key seater, up to 3 in.  
No. A 344 1 pulley key seater, any diam., 3 in. face.  
No. A 421 1 belt tightener, 2 ft. 6 in. long.  
No. A 458 1 tinner's power rollers for straightening, 9 ft. long.  
No. A 410 1 power grinding stone, 28 in. stone.  
No. A 468 1 power grinding stone, 16 in. stone.  
No. A 372 1 boiler maker's power roll, 42 in. long.  
No. A 334 1 extra heavy tire shrinker, 4 in. wide.  
No. A 409 1 tire bender for 2 1/2 in. tire.

### FANS AND BLOWERS.

No. A 159 1 48 in. power ventilating fan.  
No. A 277 1 No. 9 Smith hot blast apparatus.  
No. A 10 10 blowers, Chattanooga No. C14.  
No. A 9 1 Gleason & Bailey blower, No. 9.  
No. A 25 10 hand power blowers, Hoffman, 14 in. diam.  
No. A 45 1 54 in. Garden City window ventilating fan.  
No. A 2 1 No. 3 Sturtevant blower.  
No. A 354 1 No. 5 Sturtevant blower, noiseless.  
No. A 1 1 No. 7 Sturtevant blower, noiseless.  
No. A 423 2 No. 7 Buffalo noiseless blowers.  
No. A 6 1 No. 8 Buffalo blower.

No. A 124 1 No. 9 Buffalo cupola and forge blower.  
No. A 5 1 No. 10 Buffalo blower.  
No. A 8 1 10 in. Buffalo blower.  
No. A 300 7 Andrews & Johnson steam driven exhaust fans.  
No. A 7 1 No. 1 Champlon blower.

### AIR COMPRESSORS.

No. A 358 1 9 x 9 Clayton duplex.  
No. A 195 1 4 1/2 x 6 Clayton.  
No. A 118 2 12 x 16 air compressors.

### HEATERS.

No. A 301 2 Smith Hill open heaters, 35 to 50 H.-P.  
No. A 448 1 Bearman feed water heater, 24 in. diam., 8 ft. long.  
No. A 447 1 Barragawanath feed water heater, 18 in. diam., 6 ft. 6 in. high.  
No. A 211 1 Payne hot water or steam heater, 600 ft. radiation.  
No. A 205 1 No. 3 Rice & Whitacre heater.  
No. A 126 1 Stillwell-Bierce No. 4 heater.

### HOISTING RIGS.

No. A 131 1 H.-P., 24 in. drum.  
No. A 132 1 H.-P., 20 in. drum.  
No. A 411 2 2 ton Reedy elevator hoists, 32 in. drum.  
No. A 347 1 9 ton swinging crane, mast 14 ft. high.  
No. A 432 2 "A" shaped house derricks, 40 ft. high.  
No. A 438 1 "A" shaped house derrick, 80 ft. high.

### WATER WHEELS.

No. A 157 2 36 in. turbine water wheels.  
No. A 353 2 36 in. Backus water motors.  
No. A 463 1 Tuerks 16 in. water motor.  
No. A 464 3 Tuerks 8 in. water motors.

### SHEARS.

No. A 330 1 double shear, with engine, cyl. 8 x 9, jaws 15 in.  
No. A 331 1 double shear, with engine, cyl. 8 x 8, jaws 14 in.  
No. A 327 1 hand power shear and punch. Will shear from 1/2 to 10 in. wide.  
No. A 328 1 hand power shear. Will shear up to 8 gauge iron.  
No. A 345 1 hand power or belt power punch and shear up to 3-16 iron.

### COMBINED OUTFITS.

No. A 442 1 combined engine and boiler, each on separate base, 24 x 48 in. upright boiler, 4 1/2 x 5 upright engine.  
No. A 329 1 hoisting rig, 2 separate engines, 2 hoisting drums attached to 36 in. x 6 ft. boiler, 5 x 12 upright engines.  
No. A 323 6 x 7 Baxter engine and boiler.  
No. A 294 8 x 9 Davey safety engine and boiler.  
No. A 216 1 single drum 7 x 10 engine and 72 x 36 in. boiler.  
No. A 212 1 portable 10 ft. x 28 in. fire box boiler and 5 x 12 engine.  
No. A 209 1 8 ft. x 3 ft. 6 in. portable fire box boiler and 7 x 12 engine, with hoist drum and winches.  
No. A 208 1 12 x 3 ft. portable fire box boiler and 6 x 12 engine.

### MISCELLANEOUS.

No. A 172 1 double roller paint or ink grinder for power.  
No. A 125 1 No. 1 Hubbard portable bake oven.  
No. A 317 144 in. 1/2 in. brass pipe.  
No. A 417 24 in. cider or wine press.  
No. A 429 1 passenger elevator car, 4 ft. 6 in. x 4 ft. 8 in. wide.  
No. A 430 1 steel rotary car, 2 ft. 6 in. x 2 x 5 ft.  
No. A 431 10 turnstiles from Omaha Exposition.  
No. A 465 1 4 horse bunching sweeper and revolving broom.  
No. A 418 14 in. Crane steam gate valve.  
No. A 394 18 x 14 friction clutch pulley.  
No. A 412 38 x 8 in. friction clutch pulley.  
No. A 700 1 Buffalo jet condenser.

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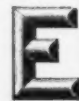
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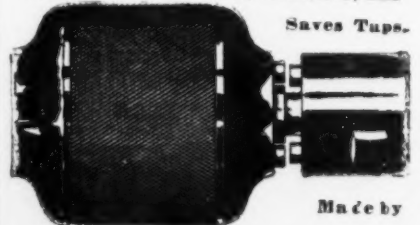
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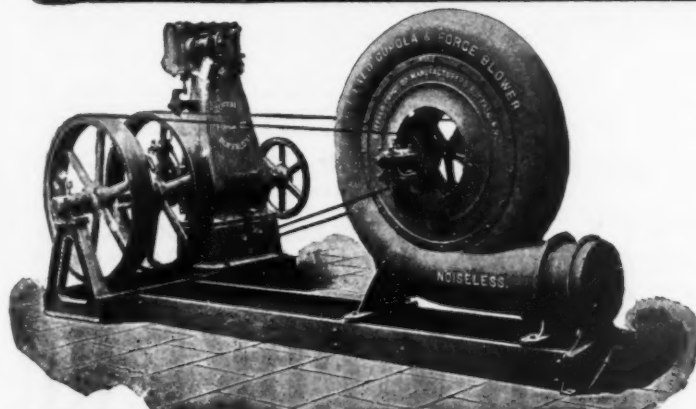
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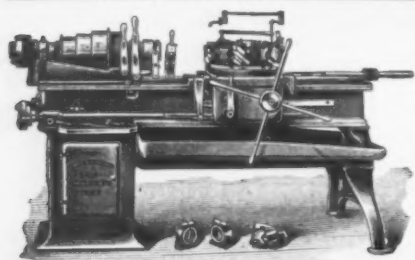
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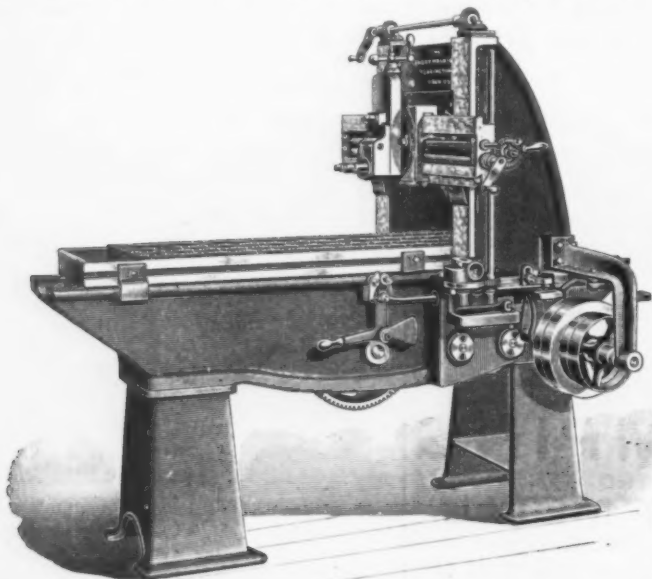
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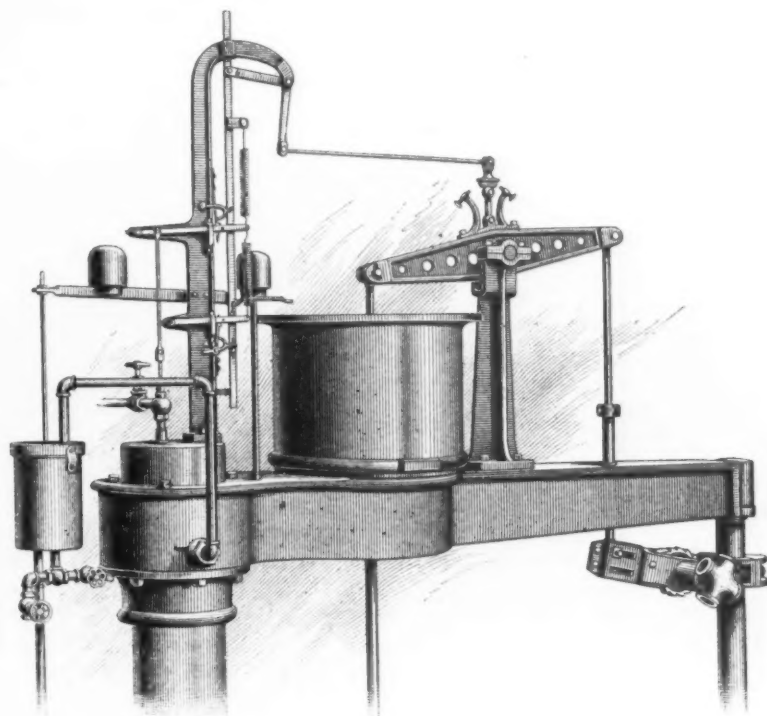
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In the mechanical stoker designed by the Century Machine & Mfg. Company of Mansfield, Ohio, an oscillating movement is imparted to the bars, Fig. 4, with the object of pushing the coal forward. These bars move in opposite directions; for instance, as the top bar moves forward the second one will move back, the third one moves forward and the fourth one back. On the next stroke the action is reversed, with the result that the coal is pushed forward regularly and steadily at all times and it is impossible for ash or clinkers to stick to the bars.

The bars are made 15 inches long by  $6\frac{3}{4}$  inches wide, with two strong ribs running in either direction, and

are furnishing a low pressure steam motor, shown in Figs. 1 and 2, the advantages claimed for this motor being extreme cheapness in operation, long life without repairs and the ability to commence mechanical firing with 3 to 4 pounds of steam. The live steam is admitted at the valve B, passing down into the large cylinder C. As this cylinder is filled with water to within 3 inches of its top, the water is forced through the pipe D, raising the piston in the cylinder E. As will be observed, when the piston is rising the ratchet is on the reverse. As soon as the piston comes to the top of its stroke it automatically closes the steam valve B, when the steam is rapidly condensed by the water in the cylinder, thereby creating a vacuum which draws the piston down to the bottom of the stroke in the cylinder E and turns the ratchet attached to the stoker. As steam is used at but one end



THE CENTURY LOW PRESSURE MOTOR.

these, in connection with the peculiar shape of the bar, prevent it from warping. The bars are cut so as to rest on the rocking bar and require no fastenings, and when a bar has burnt out it can be very quickly and easily replaced. Air is admitted through the face of the bar, coming up through the coal, the holes in the bar, Fig. 3, being of an inverted cone shape in order that nothing can adhere to or fill them up. The size of the orifices is graduated in the bars, the coal requiring less air the more nearly it is burnt out.

When the coal has been completely consumed the ashes are pushed forward into the ash receiver. This receiver is made in sections, and when the fireman wishes to remove the accumulated ashes he can drop one section at a time, thereby avoiding any heavy back draft, which would be detrimental to good fuel consumption. The stoker is mounted on wheels to permit of its being easily withdrawn from under the boiler in case repairs are to be made to the brick arches, boiler or stoker.

In connection with the mechanical stoker the company

of the stroke, and the motor moves only from one to one and one-half strokes per minute, the consumption of steam is a very small item. This motor is also valuable for low pressure heating plants, in which it is impossible to run a steam engine.

In addition to the exhibition of new machines at the Automobile Show in the Madison Square Garden, November 3 to 10, there will be a lot of foreign carriages shown by the members of the Automobile Club of America, under whose auspices the show will be given. A. C. Bostwick will exhibit his new Ranhard & Levassor carriage, the fastest in America, having 24 horsepower; D. W. Bishop will show his 16 horse-power carriage of the same make; S. T. Davis, Jr., a steam racing carriage; A. L. Riker, an electric racing carriage, and Alex. Winton, a gasoline racing carriage. Besides the vehicles on exhibition the makers will have stored at the east end of the garden between 50 and 75 carriages, which will be run on the track, and it is the intention of



the management to have from 20 to 25 carriages moving on the track at all times during the show, except when competitions are on.

## Admiral Melville's Report.

### The Bureau of Steam Engineering.

WASHINGTON, D. C., October 23, 1900.—The annual report of Admiral George W. Melville, chief of the Bureau of Steam Engineering, has been forwarded to the Secretary of the Navy, and through the courtesy of the Department the correspondent of *The Iron Age* is enabled to present the following abstract:

The report makes a strong plea for liberal appropriations to enable the Department to keep abreast of the naval powers of the world, which are now devoting large sums not only to the building of vessels and the equipment of construction and repair plants, but to purely

my former request, therefore, that you will include in your recommendations to Congress an estimate for a repair ship, to be built especially for the purpose, with high between decks, and with such moderate protection and armament as may be deemed advisable, and to be equipped under this bureau with a complete repair plant, improving upon that installed upon the "Vulcan." This repair ship should be at least of 5000 tons displacement, and the estimated cost for the entire vessel and tool equipment would be in the neighborhood of \$1,000,000. I am convinced that this ship is a greatly needed one, and that its construction will be a most wise and judicious act and a credit to the administration of the Department."

#### Machinery Plants at Navy Yards.

Concerning the improvements under way and projected in the machinery plants of the various navy yards the report says:

"There has been great delay in placing the contracts for some of the new buildings, for the shops of this bureau at the different stations, caused, in great meas-

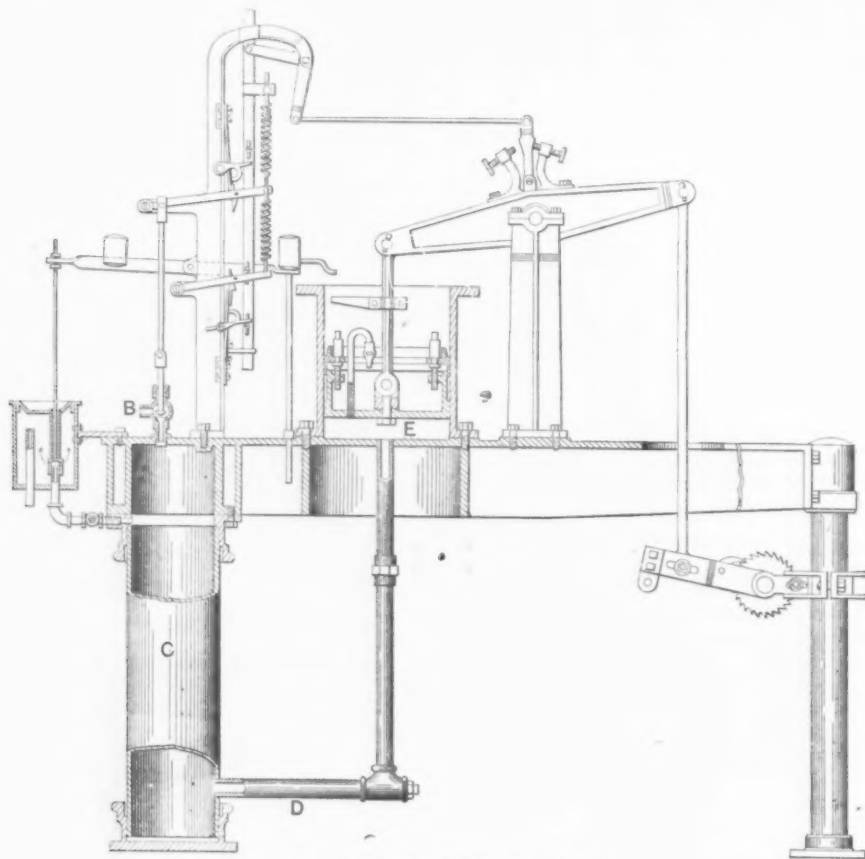


Fig. 2.—Sectional Elevation Fig. 1.

#### THE CENTURY LOW PRESSURE MOTOR.

experimental work, designed to point the way to desirable innovations in designs and methods. The activity of the navy during the past year, especially on remote foreign stations, has emphasized the importance of maintaining first-class repair vessels in the neighborhood of our fleets. The work done in foreign shipyards has been most expensive, as well as otherwise unsatisfactory, and the report urges that a floating machine shop be speedily equipped and sent to the Orient.

#### A Repair Ship.

"I can only regret," says Admiral Melville, "that the Department did not insist upon this step, in spite of the failure of the commander in chief of the naval forces there to realize the importance and economy of having such a vessel at hand. It is a most obvious fact, at least to all who recall the work done by the "Vulcan" to the ships in the blockade squadrons off Santiago, that a properly equipped repair ship would have been of the greatest service during the past year in Asiatic waters, saving time and expense beyond present calculations, and insuring work of a character of that undoubted integrity resulting from a desire to make each job completely efficient, and not with an eye to pecuniary profit, the anxiety for which so frequently prevents thorough excellence in contract repair work. I respectfully repeat

ure, by the high prices of materials at the time, which necessitated changes in original design to bring the cost within the limits of the appropriation. In other cases, when the contract had already been placed, the sudden rise in cost of material caused delay in its delivery and made it impossible for the contractors to complete the buildings within the time limit. Great care has been taken to make all new buildings absolutely fire proof, not only as a precaution against loss and delay to the Government by their destruction by fire, but also as a measure of economy in lessening cost of maintenance and repair after completion. Contracts have been made for the power plant for the new shops at the New York navy yard, and also for the power tools. The shop at Bremerton is practically completed and contract has been made for the tools. The shop at Port Royal is nearly completed, but no contract for tools will be made till the question of the removal of the station has been decided.

"In all the specifications it has drawn for tools, the bureau has been studiously careful to so word the description of the kind of tool desired, its power, weight, attachments, &c., as to avoid calling for patented or proprietary articles which could be furnished by one manufacturer or dealer only. That the bureau has been successful in this is proved by the large number of bids re-

ceived from the most prominent manufacturers and dealers in all parts of the country, from which a selection of first-class tools has been made at very reasonable prices. A most prominently important station for the establishment of an extensive and modern machinery plant is that in the Philippine Islands, whether at Cavite or at a more suitable location probably obtainable. Pending definite determination of this point, the bureau has improved the Cavite plant by sending out such power tools and supplies as can be installed in the available buildings and readily operated. In the interest of both expediency and economy I strongly urge the early selection of the most desirable site for a complete naval repair station there, and the erection of suitable buildings for the needs of this bureau, in order that it may provide for all machinery repair work required by our vessels in the East."

#### A Fund for Experimental Work.

Referring to an estimate of \$100,000 for general experimental work, Admiral Melville calls attention to the fact that immense sums of money are expended annually by other naval powers, notably Great Britain, in securing exact data concerning the performance of the different types of machinery and apparatus on shipboard. The results to be obtained from such experiments cannot be valued by dollars and cents, and this appropriation is

certain stipulated amount. A practice of this nature obtains abroad, especially in France, and is intended to protect the Government against installation of uneconomical machinery. In view of the fact that all detailed plans are examined and approved by the bureau, the chief engineer has not heretofore advocated the adoption of this course, as it would scarcely be fair to the builder to impose penalties for failure to reach the highest economy with machinery officially approved. It is suggested, however, that as no difference, unfavorable to Government designs, has been found in the performance of our own machinery and the results of foreign trials, it is time now to give attention to this important feature preparatory to any later steps in approaching the subject in future contracts and specifications.

#### Consolidation of Bureaus.

An important feature of the report is devoted to a discussion of the proposed consolidation of the Bureaus of Construction and Repair, Steam Engineering and Equipment into one Bureau of Ships, which was recommended to Congress by the Secretary of the Navy in his annual report, submitted a year ago. Admiral Melville opposes this proposition with great vigor, asserting that it is contrary to the best practice in all administrative work, both public and private, in this country and abroad.

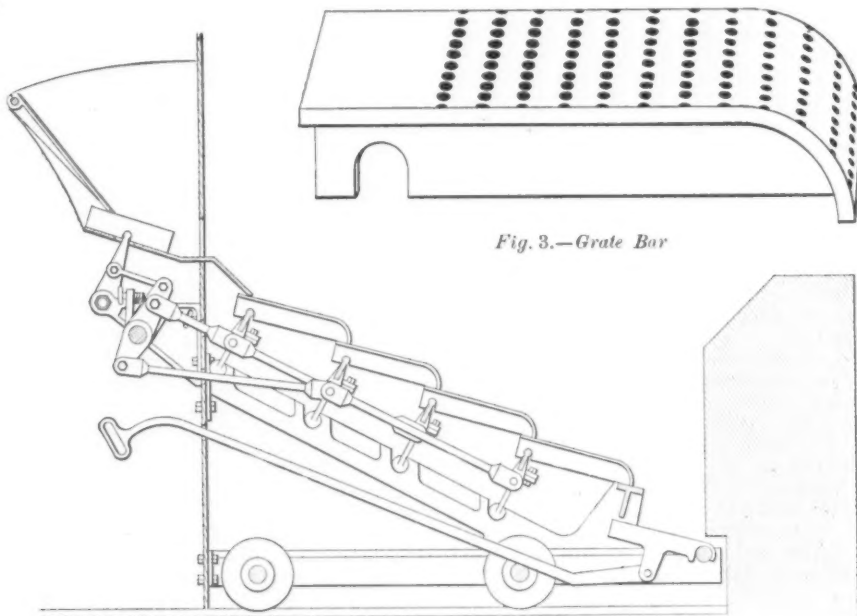


Fig. 3.—Grate Bar

Fig. 4.—Sectional Elevation of Stoker

#### THE CENTURY MECHANICAL STOKER.

therefore asked in order that the United States may keep abreast of other nations. Experiments with models cannot do more than indicate in a doubtful degree changes desired, owing to the reduction in size and the difficulty in observing delicate differences. The bureau is said to be greatly in need of reliable data in regard to the economy of engines when running at a small fraction of their maximum power, and to obtain this information expensive experiments are necessary with a modern vessel specially fitted with appliances and instruments. It is suggested that the economy of the boiler and of the main engine, as well as each other class of auxiliaries, could be obtained for various speeds, and the data thus secured, it is said, would doubtless suggest changes that would save many times the cost of the experiments. It is recommended that the "Cincinnati" or the "Raleigh" be fitted up for this purpose and be also used as a practice vessel for the Naval Academy, with a view to utilizing the cadets as observers.

Concerning the experiments made within the past year in the use of liquid fuel, the report states that while great convenience attaches to the use of petroleum fuel, yet in point of economy and full efficiency it has not been demonstrated, either in this country or abroad, that a change from coal is possible.

Referring to the data of trial trips, the report calls attention to the fact that the United States has not yet imposed upon contractors for new ships a requirement for economy tests whereby the machinery at maximum and other selected power must achieve a stated independent horse-power at a cost in coal not to exceed a

"In every large shipbuilding establishment," says the report, "the bureau system actually prevails to a more complete separation of the special branches of the work than has ever been practiced in the navy. Nominally there is a head of each concern, but no pretense is ever made by that head of possessing expert knowledge regarding all the branches of the establishment. Frequently this head is not a technical expert at all, but simply a good 'general manager,' even though he has another 'general manager' under him and also an expert chief for each separate division. Every tendency is to increase specialization in work, owing to the ascertained value of a system whereby leading talent in each department may devote itself to the advancement of its particular branch and not be diverted therefrom through a maze of miscellaneous and unrelated work."

Continuing, Admiral Melville argues that no officer could be found possessing the necessary expert knowledge to discharge the duties of the proposed Bureau of Ships with the same satisfaction that is guaranteed by the present system, under which a special expert is in charge of each branch. Tendencies to introduce fads or experiments in the construction of ships which might develop dangerously under a single head are now prevented by the fact that the Board of Construction revises all plans, criticises designs and furnishes the Secretary of the Navy with complete protection against the adoption of designs of doubtful expediency or value.

"That differences should agitate the board," says the report, "is not only natural, but also highly proper, and is a most effective protection against hasty and regrettable



ble action. This occasional lack of harmony must not be confused with any real lack of efficiency, nor into a cause for recommendations having for their object the reversal of the true business principles by a combination of radically different professional duties. Not only would such a course fail to bring harmony, but a surer result would be in a speedy decline in the rate of progress made in each profession. I, in common with the chiefs of other bureaus, naturally feel a pride in the eminence of the bureau I control, but I am honest in declaring that my opposition to the proposed combination has a reason far above personal feeling or ambition, and that reason is my positive knowledge of the fallacy of the arguments for it and the firm conviction that only confusion, greatly decreased efficiency and greatly increased expense can possibly result. I can, therefore, frankly ask that you reconsider the recommendation before renewing it in this year's report."

#### Personnel of the Navy.

Another interesting feature of the report deals with the personnel of the navy after its second year of existence under the recently enacted law, the effect of which Admiral Melville states has been very unsatisfactory to the steam engineering interests in the navy. The magnitude of the work of the Engineering Bureau has rapidly increased with the additional ships in commission and the new ones building, while at the same time there has been a very decided decrease in the number of skilled officers available for supervising this work. The operation of the new personnel law has cut off the fullest opportunity for the acquirement of practical engineering knowledge on the part of the younger officers, but Admiral Melville states his belief that the cause lies not so much in the law itself as in the failure of the Department to encourage officers to take up this line of work and to "enforce their embracement of these opportunities in the most effective manner by Department orders."

Unless prompt steps are taken to materially increase the present staff of expert engineer officers, Admiral Melville predicts that serious consequences will surely follow. That disastrous accidents on board ships fitted with complicated machinery have not already occurred is due, in his opinion, to the most anxious and continuous care on the part of the present small force, and a state of tension has existed that is now sapping the energy of the entire staff. In conclusion, Admiral Melville says:

"Inattention to my recommendations or apathy regarding the immediateness of the necessity for more active and decided measures toward securing the desired conditions can surely result in nothing but rapidly decreasing efficiency, from which it will be continually more difficult to recover, and the cost of which will be significant in enormously larger repair bills, shorter lived machinery, and a fleet of vessels in doubtful fitness for their designed service—a Cervera fleet, with limitless men, but lacking the technical experts needed to meet the extraordinary and ever new conditions of emergency and war.

"I regret I have failed to impress you to the point of action by my former communications. Had a series of calamitous events occurred during the past year to make graphic the insufficiency of the present force of expert engineers, I am sure potent remedial measures would have been promptly taken by the Department. But while glad indeed to have disasters averted, I can assure you that danger now exists. It lurks in the silence of seeming security, but a knowledge of its presence should increase the desire to hasten its removal. Fortune alone has postponed casualty.

"The country can safely count on the valor and fidelity of its officers and men, but fidelity and valor without knowledge of the use of the arms given them with which to do battle can avail little against an efficiently drilled foe, and will scarcely afford more than an exhibition of heroic sacrifice, as needless as it would be cruel. The arms of a battle ship are her machinery and her guns, 'useless each without the other,' and strong to victory when working well together. No deep thought is necessary to understand this, in the light of late experience. The very highest degree of excellence in both the condition and handling of each is the price of successful encounter, or at least is the expectation of the country. A ship motionless or helpless to maneuver well could never make efficient battle, be her guns ever so good or her crew ever so brave. To guard against this the head of the Steam Engineering Department must be full of resource and armed by experience and engineering ability only attained by years of intimate association with machinery under all conditions of service. Haphazard luck may bring a ship through without this, but sane judgment would condemn dependence on simple fortune or a failure to use every possible effort to insure a most competent management in this most important of ships' departments.

"Engineering work is as full of interest as it is of importance, and the line may well be proud to preserve the control of it. The most intelligent are eager to become experts, and with their superior advantages need no primary instruction. They do need much experience with and observation of machinery at work and under repair or construction, and it is for the Department to decide upon the quickest way by which they can obtain this, and then to afford them the fullest opportunities for doing so.

"I have already suggested to have incorporated in the regulations the best method for the needed training at sea—i. e., by departmental order to compel all line officers below the navigators of ships to alternate in duty in the engine room and on deck, and efficiency reports to be made quarterly to note their progress and class their ability. My plea is for the highest efficiency; for immediate recognition of its importance, as well as of its present decadence through depletion of the number of technical experts, without full provision for early replacement. I hold up the warning finger and sound the note of alarm."

W. L. C.

#### The Emlyn Iron Works.

A rolling mill having a number of interesting features has been built this year at East Chicago, Ind. It is worthy of special attention, as it illustrates the rapidity with which a plant of good capacity can be completed and put in running order. The project was only conceived about the beginning of last winter. Ground was broken in January of this year, and the works began to roll iron on the 9th of July, running steadily from that day. It usually happens that an establishment of this kind, for one reason or another, is delayed in the work of construction and therefore production is deferred for months after the time expected. The builders of the Emlyn Iron Works, however, were not hampered by delays in waiting for the manufacture of machinery. They purchased a large part of their equipment from owners of idle rolling mills in different parts of the country, taking care to secure machinery that had been very little used and was in first-class condition. The work of preparing the foundations was about the most difficult part of the undertaking.

These works, as stated, are located at East Chicago, Ind., which takes the same freight rates as Chicago to all points. The company acquired a tract of 13 acres lying along the Calumet Terminal Railroad, which is one of the local belt lines, connecting directly with all railroads running in and out of Chicago. The rolling mill building is an L-shaped structure, which is 120 feet wide at the end used as a scrap shed and 132 feet wide at the end used as a shipping department. It is 350 feet long, running from the former end to the outside corner, and 375 feet long from the latter. It is admirably arranged for the receipt of raw material and the shipment of the finished product. Three sets of tracks run to the mill from the belt railroad. One track is used as a scrap track, running on the south side of the mill, a second track is used for coal and runs along the center of the mill near the puddling furnaces, while the third track, which is used for shipping, runs along the north end of the mill. All material thus comes in at one end of the plant and goes forward through the mill, not reversing its direction at any point. The shipping track is 500 feet long and is depressed so as to bring the car floors on a level with the floor of the mill.

The puddle mill is arranged close to the scrap shed. This department contains five double puddling furnaces and one large heating furnace for square piles on board. The puddling furnaces have double cylinder bottoms and the heating furnace has a sand bottom. These furnaces are all arranged with vertical water tube boilers inclosing the draft stack, thus utilizing the waste heat in generating steam. The puddling furnaces are equipped with Hyde boilers, and the heating furnace with a Linn boiler. These boilers are each of 250 horsepower. The puddle train has three sets of 18-inch rolls, operated by a 28 x 48 inch engine with a 50-ton fly wheel. A coffee mill squeezer is connected with the mill, being geared directly from the engine and not placed at the end of the mill, as is usually the custom. This mill rolls muck bars from 3 to 8 inches in width and ½ to ¾ inch thick. The heating furnaces for heating piles are four in number, two for each finishing mill, and are arranged in the center of the building so as to come between the puddle rolls and the finishing trains. These heating furnaces also have Hyde vertical boilers, of 250 horse-power each, utilizing the waste heat. The puddle balls, scrap bar or muck bar and piles are conveyed between the furnaces and the rolls by an overhead trolley or telegraph system. The boilers over the puddling and heating furnaces work very satisfactorily, furnishing an ample supply of steam for all purposes.

The finishing rolls are located in the other wing of

the building within easy reach of the heating furnaces. These mills comprise a Belgian train for rolling small sizes and a bar train for turning out large sizes of bars. The Belgian train consists of one stand of 12-inch roughing rolls and five sets of 9-inch finishing rolls, all being operated by a 24 x 30 inch engine, geared 2½ to 1. The roughing train is placed 40 feet in front of the finishing train and is geared directly to the engine, while the finishing train is operated by a belt from the same engine, which runs at 150 revolutions per minute, giving the finishing train a very good speed. Arranged in this way the mill makes a larger product in longer lengths, using a larger pile to start with, than if the roughing train was in line with the finishing train. This mill has turned out 200,000 pounds double turn, but this production is expected to be considerably increased. Beyond this train is a 150-foot cooling bed, which is elevated so that the iron rolls to the shears by gravitation. On this mill are made 5-16 to 1¼ inch rounds and squares, ½ to 3 inch flats, and all other sizes for wagon work, as well as hexagonal iron and the general sizes for the merchant trade.

The bar train, which is almost in line with the Belgian train, has rolls 16 inches in diameter, with four sets of housings, all three high. Running this train is a 30 x 38 inch engine, having a speed of 75 to 150 revolutions. The special feature of this train is its fast speed for rolling guide rounds. It makes guide rounds from 1 to 2 inches, flats from 1½ to 8 inches and all other sizes of bar iron. The capacity of this train as shown by the work done is 250,000 pounds, double turn. Beyond this train is a hot bed 125 feet long, allowing such lengths on rounds and squares.

Narrow gauge tracks run through the mill for the convenient handling of all classes of material. These tracks run past all the shears. The plant has eight shears for cutting scrap and merchant bar, and these are run by one line of shafting, which is 300 feet long.

The mill building is a fine structure, composed half of frame and half of steel, the scrap shed being frame, but the larger portion of the structure covering the finishing mills is entirely of steel. The building gives ample room for all departments. No portion is cramped or crowded.

Another building, used as a machine shop, roll turning shop, blacksmith shop, pattern shop, &c., is 32 x 150 feet. It contains the electric light plant, which is used for furnishing light for the entire works.

The entire plant was designed by J. E. Jones, the superintendent, and the whole work of construction was done under his supervision. Mr. Jones has had a long and varied experience in the practical working of iron, and the completeness of this plant is an evidence of ability. The master mechanic is A. C. McCallum. Executive officers of the company are as follows: President and treasurer, G. R. Stewart; vice-president, R. M. Cherie; secretary, H. C. Dolph. Mr. Stewart was formerly president of the Westernman-Stewart Iron Company of Marion, Ind. The main office of the company is in rooms 205 to 207 Western Union Building, Chicago. The general sales agents are Hubbert & Hubbert, 937 Monadnock Building, Chicago.

**Tin in the Straits Settlements.**—Notwithstanding the high price of tin and the consequent stimulus to production there was in 1899, as in 1898, a reduction in the output of the metal in the Straits Settlements. According, however, to the report of the Resident-General, published by the English Foreign Office, this was not due to any exhaustion of the sources of supply, but to the difficulty of obtaining a sufficient supply of labor. Nor is it only the tin mining industry that has thus been hampered. "The scarcity of Chinese and Indian labor," writes Sir J. A. Swettenham, the Acting High Commissioner, "is now so great that not only is it necessary to pay double, and sometimes treble, the wages current a few years ago, but the scarcity has been so great that the most important works—railways, irrigation, roads, &c.—have been seriously delayed. The Government has done everything in its power to relieve the situation. We have arranged for direct steam communication between several Chinese ports and the Malay States, and we have promised a subsidy of a dollar a head for every Chinese laborer imported by this means up to a certain number and for a term of years. We have made a somewhat similar arrangement for the introduction of Indian labor; and though the Government has gone into the market with other employers, and made every effort to obtain recruits from Southern India on terms most favorable to the immigrants, we have met with very little success." There are not many places where Chinese labor is welcomed, and it is all the more singular that it should hold back when the Malay States not only open the door to it, but offer substantial inducements for it to enter. But, in any case, a falling off in production, due to what it is to be hoped

will prove only a temporary scarcity of labor, is a different thing from a decrease due to exhaustion of supplies. Moreover, though the output of tin has decreased, the finances of the Government have benefited by the high price of the metal. The export duty on tin, Sir J. A. Swettenham explains, follows a sliding scale, so that when the price of the metal is high the duty increases, and when it is low the percentage to a value is a good deal less. Consequently, owing to the high prices ruling in 1899, although the quantity exported fell to 38,351 tons, as compared with 39,632 tons in 1898, the duty received amounted to \$6,181,500, as compared with \$3,210,700.

### Central Pennsylvania News.

HARRISBURG, PA., October 22, 1900.—During the last week there was a large increase in the production of the Pennsylvania Steel Company. Two 50-ton furnaces, which were recently remodeled, are again in operation. There is no change in the departments which are turning out bridge material and switch and signal work. Large quantities of raw material were received during the week. The structural part of the new machine shop is about completed and a good deal of new machinery is being received.

The Harrisburg Foundry & Machine Company have placed a contract for duplicate electrical machinery which will double the capacity of their new power plant. Work upon the foundations for this new addition has been commenced. The new generator will be of 125 horse-power capacity. One of the two new additions to the main plant has been practically completed. It is a one-story brick and iron building, 35 x 50 feet, and one portion of it will be utilized as a chipping department, which is at present located in the foundry. It will be equipped with the most modern pneumatic chipping machinery. The other portion of the building will be devoted to the storage of foundry ladles. The contract for the erection of the other new building, a one-story brick structure, 50 x 60 feet, to be used as a weighing department, has been let and work will be commenced upon it just as soon as the Pennsylvania Railroad Company complete the laying of the track connecting it with their lines. Grading for this track has been completed, and the laying of the steel will be commenced this week. This new building will also be used as a storage room for the finished product of the main plant, and a portion of it will be fitted up for stabling purposes. The new 175 horse-power tandem compound engine for the electric light plant at Trinidad, a duplicate of the order filled for the same company several years ago, will be ready for shipment in several weeks. It will be about eight weeks before the two 125 horse-power Harrisburg Standard engines for the electric light plant at Sydney, N. S. W., can be shipped. The company have just booked an order for a new 400 horse-power Harrisburg Standard direct connecting engine for the power plant of the Cumberland Valley Traction Company at Carlisle. Two sets of men are still being worked day and night at this busy plant.

General Manager McCauley of the Central Iron & Steel Company is among those who report a noticeable holding back tendency. He says, however, that affairs at his plant continue in a most satisfactory condition. With the election out of the way an immediate increase in orders is anticipated.

Export work continues to keep the Harrisburg Mfg. & Boiler Company unusually busy. The product of this plant, water tube boilers, is in increasing demand in Mexico and South America. About 125 men are now being employed day and night. The company are contemplating the erection of a new foundry in the near future.

There is every prospect that the present busy condition of affairs at the local plant of the Lalance-Grosjean Mfg. Company will continue. The plant is now at work on a 300-ton order for tin plate to go to Norristown.

The employees of the Duncannon Iron Company objected to the reduction from \$4 to \$3 per ton, the basis of wages now in force throughout the district, and there was a compromise on \$3.50 per ton for two weeks longer. The bar mill and nail works are in operation.

Theodore Shaffer, president of the Amalgamated Association, suggests that at the next convention of that organization a non-interruption clause should be introduced in the scale. This would permit the manufacturers to operate their plants pending a settlement. It could be done by a provision in the agreement that the mills be operated after the end of the scale year for one month, the workmen to be paid at the same rate as they received during the preceding two months. The scale of the Illinois Steel Company's plant, at Milwaukee, contains a "non-interruption clause."



## Lifting Water by Compressed Air.

BY CLARK HOWELL, CHARLESTON, W. VA.

It is only within recent years that moderately deep well pumping by means of compressed air has become at all common. Under favorable conditions the system possesses several decided advantages over all other methods. Among these may be mentioned the absence of all moving parts, in the way of valves, pistons, rods and packings necessarily located a hundred feet, or several times that distance, down in a well where they are difficult of access at all times, and which soon or later become worn or broken, when they must be taken out to be repaired. All these parts are done away with in the air lift system. Nor does sand or grit affect the working of this system in any manner. There is not a valve or attachment of any sort whatever placed in the well, simply two ordinary pipes. The necessary machinery is located in the engine room, where it is readily accessible at all times.

The object of this article is chiefly to illustrate two quite novel features in the adaptation of the system to pumping water from muddy streams flowing in deep channels. To make this entirely clear to the readers of *The Metal Worker*, a brief description of the air lift system will not be out of place.

First, there must be an air compressor—that is, an engine that condenses or compresses air to the necessary pressure—discharging into a metal tank called the air receiver. To this a pressure gauge and safety or escape valve are attached, which are identical in all respects to those commonly found on steam boilers. From the receiver a small gas pipe is led to the well and thence downward to near the bottom, where it enters the water discharge pipe; or a series of air conducting pipes may be attached to the receiver and connected to a series of

There is, however, one important condition to the successful operation of the air lift system. There must always be ample depth of water in the well to insure sufficient resistance at the foot of the discharge pipe to force the lightened column inside the discharge to the top of the well. This is termed "submergence."

Well informed engineers who have made a study of the system say the submergence should be 50 to 60 per cent. By this is meant 50 or 60 feet of water to each 100 feet depth of total lift. That is, if the well is, say, 200 feet deep, and it is desired to discharge the water into a tank situated 50 feet above the top of the well, there must be not less than 125 feet (50 per cent. of 250) to 150 feet (60 per cent.) of water in the well at all times. A less depth would probably render the system useless, as the resisting pressure would be insufficient.

It is customary to discharge the water directly into a tank or receiving basin situated immediately above or closely alongside of the well, with very short, if any, lateral conveying pipes.

During the past 12 months there has been constructed at Point Pleasant, W. Va., on the bank of the Ohio River, a water works employing the air lift system to obtain water from the river, in which this practice was radically changed.

All the machinery was located above the highest known flood line, which is over 60 feet above the lowest

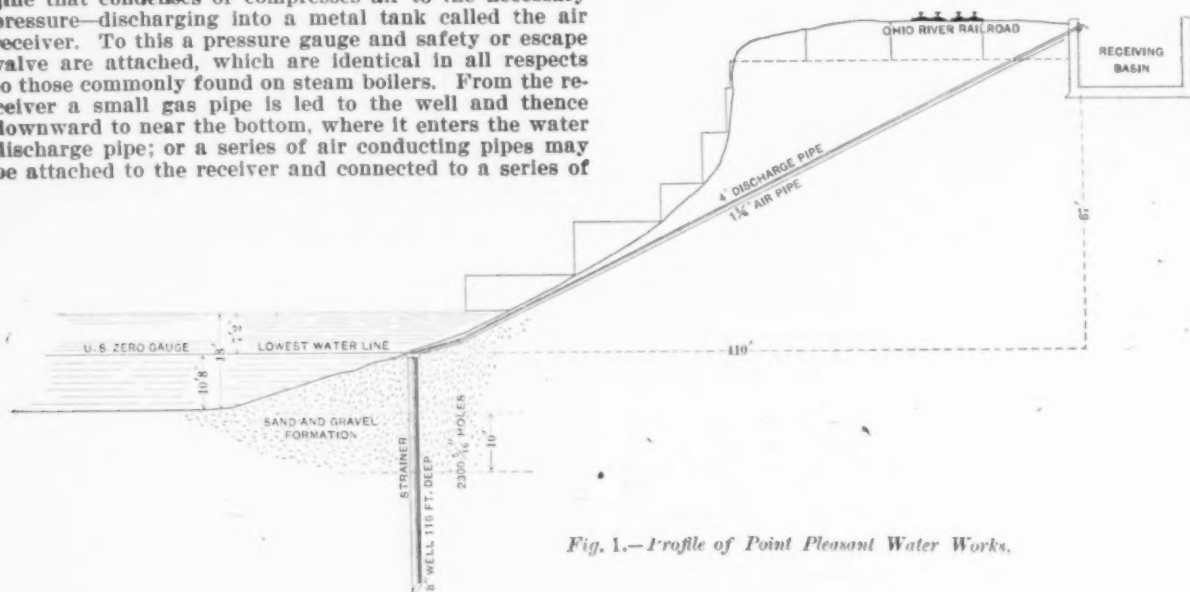


Fig. 1.—Profile of Point Pleasant Water Works.

### LIFTING WATER BY COMPRESSED AIR.

wells situated closely together or remotely at varying distances.

Suspended in each well is a water discharge or conducting pipe, also reaching nearly to the bottom or as far down as may be desired. This pipe may be of any desired size, but is usually several times that of the air pipe in the proportion of 4 diameters to 1, or 4 to 1 1/4, depending on circumstances.

The air pipe is usually arranged to follow closely along and outside the discharge pipe to its lowest extremity, where it is fitted with a return bend and nipple, as shown in illustration, Fig. 2. It will be observed that the air from the receiver is thereby discharged upward directly into the bottom of the water discharge pipe. It has been the practice of some engineers to attach a brass nozzle at the extremity of the air pipe. Various styles of these are offered, some being patented, for which the makers claim decided advantage; but it has been ascertained that in this case nothing is better than something (anything). A free discharge of air directly into the foot of the suspended discharge pipe is all that is necessary.

The effect of discharging highly compressed air into the bottom of the discharge pipe is to displace some of the water in it, lessening the gravity of what remains until overcome by the greater pressure of the solid column of water outside of the discharge pipe within the well. Both the air and water in the suspended pipe are forced upward by this resisting pressure and discharged at the top of the well or outlet of the suspended pipe. It will therefore be apparent that as long as there is sufficient depth and flow of water into the well to constantly refill the discharge pipe, and air is supplied to reduce the gravity of that in the discharge pipe, the operation, as described, will continue.

river stage (U. S. zero gauge). The franchise granted the water company was for a combined water and electric light plant, and specified that water was to be taken from the Ohio River. The most desirable site obtainable for the works was about a mile above the town, but the Ohio River Railroad tracks at this point were too close to the river bank to permit the erection of the works on the river side of the railroad. The power and pumping house had therefore to be located about 200 feet distant from the top of the bank, about 400 feet laterally from low water point in the river and 67 feet above it, as shown in Fig. 1.

To have constructed a pumping well of sufficient depth and size to accommodate pumps to draw water from the river channel at zero stage and a tunnel to the river would have made the cost of the works so great that sufficient capital could not have been secured to erect them. Some other and less expensive system had to be adopted. Manufacturers of water works machinery were consulted and various plans and systems considered. Finally it was determined to adopt the air lift system, and a hydraulic engineer was employed to make specifications and plans. He proved so unreliable or ignorant of what was required that his services were dispensed with.

The Howell & Shanklin Construction Company of Charleston, W. Va., were then invited to submit plans and specifications. These were promptly adopted, and a contract was made with them to erect the works entire, which were completed to the last detail just as planned and specified by them.

The use of the air lift system would require wells deep enough to obtain a submergence sufficient to overcome the 67 feet bank lift plus the depth of the wells

and friction of about 500 feet of discharge pipe from the wells to the receiving basin placed obliquely up the river bank. Just here the algebraical  $x$  in the problem was found.

At a meeting of the Central States Water Works Association, held in Cincinnati, September, 1899, the writer

Later, an engineer, representing one of the oldest builders of air compressors and who has had many years' experience in this line, after a personal examination reported the situation to his firm, who declined to furnish machinery with any guarantee of success because of the probability that when the air reached the sloping pipe up the bank it would pass the water and escape, the water returning to the wells.

Nothing daunted, the contractors proceeded with the works. Presuming that the wells would always be full if located and sunk at low water line, it was decided to make them 110 feet deep. The calculation was based on 60 per cent. submergence as being ample to overcome both lift and friction.

Fig. 1 is an exact copy of a profile of the river bank made by the city engineer of Point Pleasant, and clearly shows the difficulty encountered. Careful soundings of the river channel were made, and it was found that there were several feet depth of sand and gravel forming the river bottom at this point. Well casing 10 inches inside diameter was driven to the rock, about 40 feet in depth. This casing was perforated with hundreds of  $\frac{1}{4}$ -inch holes, commencing at about 10 feet from the top and extending about 10 feet downward. After the 10-inch casings were in place 10-inch holes were drilled in the underlying rock 116 feet deep and cased 8 inches inside diameter from bottom to top. This casing was also perforated similarly to the outer one, only the holes were larger—5-16 inch. The space between the two casings was tightly calked at the top to prevent water entering the wells at this point. Four-inch discharge pipes and  $1\frac{1}{4}$ -inch air pipes were properly fitted and suspended in each of the wells, with their extremities 110 feet below the top of the 8-inch casing.

Both pipes were suspended from a water tight cap, Fig. 3, resting on the top of the 8-inch casing shown in Fig. 2. It will be observed that no water can enter these wells except through the perforations in the casings, which are 10 feet to 20 feet below the flowing water in the river. None can enter at the bottom. It was the desire to allow the river water to enter the wells only through the perforations after having passed through the sand strata mentioned, which would serve as a filter. Before proceeding further, I wish to state that this feature has proved successful beyond expectation. However muddy the river may be, the water taken from the wells is bright and sparkling at all times.

Just when the wells were completed and the pipes in place, and extended up the sloping river bank a short distance, the river rose over the wells. The pump and air compressor builders were weeks behind promised delivery, and for two months the wells stood unused as

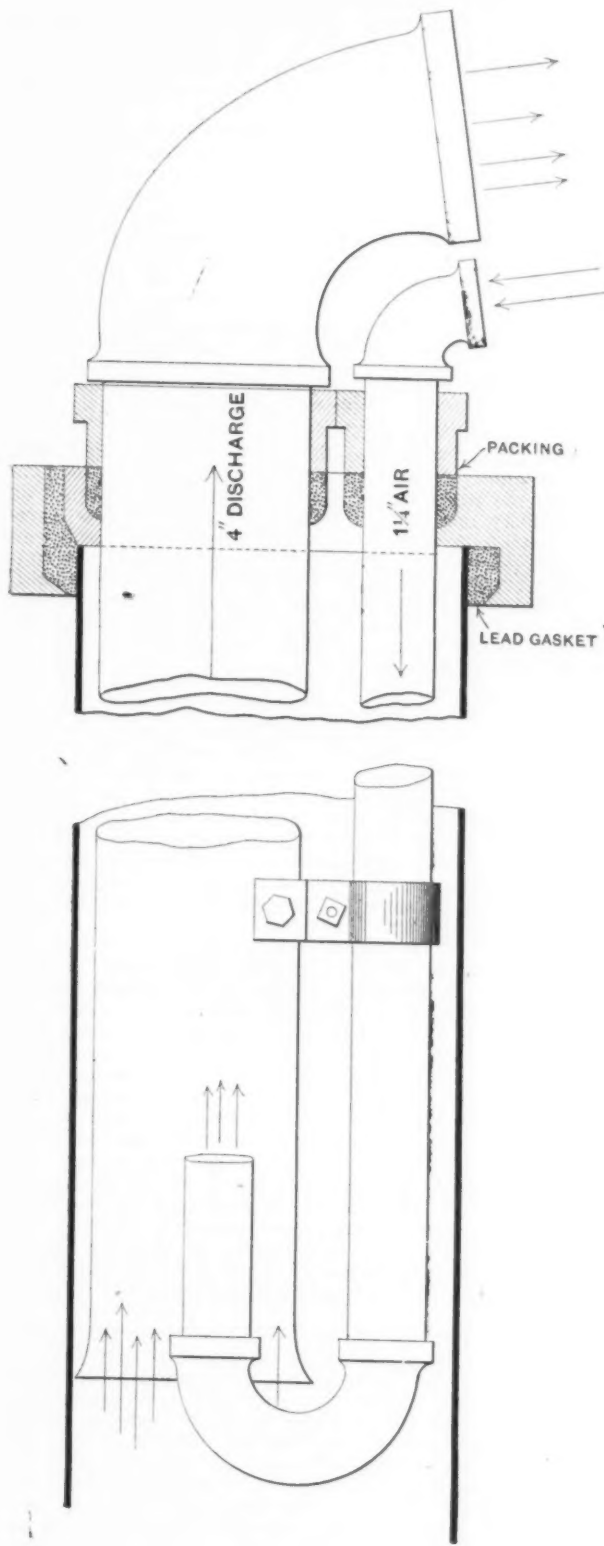


Fig. 2.—The Air Lift

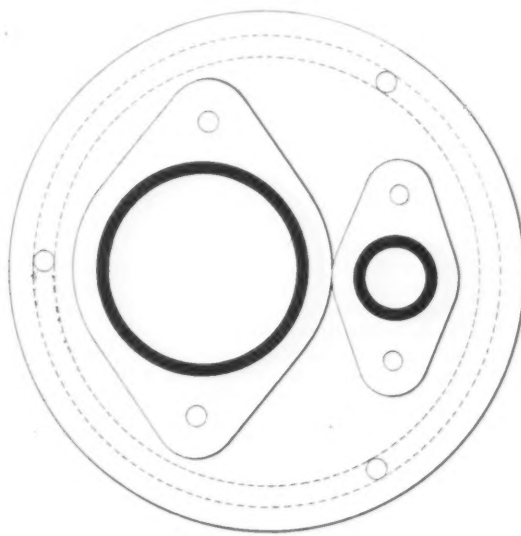


Fig. 3.—Cap and Gland for Well Head

#### LIFTING WATER BY COMPRESSED AIR.

sought information regarding the application of the air lift system to such situations.

When it was stated that it was the intention to take water from wells sunk in the channel of the Ohio River and discharge it into a basin situated as described, the discovery was made that the problem was not only new but of very doubtful solution. There was no reliable information obtainable from that source on this particular feature of the enterprise.

described. In the meantime the reservoir, receiving basin and power house were completed and the work advanced as fast as possible. Just as soon as the air compressor was in place the air pipes were connected up and the wells tested before the discharges were extended to the receiving basin. One well was found with a deposit of sand in the bottom reaching 5 feet above the foot of the discharge pipe. Several unsuccessful efforts were made to force air into this well. The river having



receded, the air pipe was disconnected at the top of the well and a  $\frac{3}{8}$ -inch gas pipe coupled and lowered. It stopped 5 feet from the bottom. It was churned a few minutes and soon went down the remaining 5 feet. Again the air pipe was coupled and the air pressure increased to 90 pounds per square inch. The effect was almost startling, but gratifying. The obstruction was cleared out very quickly. No other system of pumping could possibly have accomplished the clearing out of this well of the sand deposit.

The discharge and air pipes to each well are independent. That is, each well has a separate discharge to the receiving basin and a separate air pipe from the receiver. These are carefully graded and are not exposed at any point except where the discharges pass through the top of the walls of the receiving basin, and have open discharge.

The power house is a good substantial brick structure immediately alongside the Ohio River Railroad. It contains the steam boilers, a 200 horse-power Corliss engine, electric dynamos, air compressor and forcing pump. These are all placed on separate and substantial foundations. No machinery is attached to the walls of the building. All the machinery, both pumping and electric, is belt driven from friction clutch pulleys on a line shaft. All the machinery is very substantial and capable of performing its duty without strain. The air compressor is 14 inches diameter by 18 inches stroke, with mechanically operated valves. It is speeded to 96 revolutions, and has a capacity of 312 cubic feet of free air per minute. The required working pressure is from 45 to 50 pounds, varying with different river levels.

The discharge of water is not constant, however, but irregular or intermittent, as though the air and water formed alternate strata or volumes within the discharge pipes. It varies with the depth of water in the river, ranging from 1 volume of water to 8 volumes of free air to 1 to 6. As the river is constantly rising and falling and frequently is 25 to 40 feet deep over the wells, the pressure on the sand surrounding the wells is constantly changing and affects the capacity of them as well as the necessary air pressure to pump them.

The reservoir is situated about  $1\frac{1}{2}$  miles distant and at 225 feet elevation. It is built of vitrified paving brick laid in Portland cement with 18-inch concrete bottom and roofed over with slate. Water is taken from the receiving basin by belt driven triplex outside packed plunger pumps, 9 inches diameter by 12-inch stroke, operated at 37 revolutions per minute, delivering about 22,000 gallons per hour.

As there is no demand in the town for electric current during the day, the works are operated at night only. Usually the air compressor is operated one night, and the following night the forcing pumps. The water received the previous night in the settling or receiving basin has about 12 hours to become cleared of any sand brought with it from the wells before going to the reservoir. This basin has a capacity of about 225,000 gallons; the reservoir about three times this quantity. The construction of the receiving basin is the same as the reservoir. The engine has ample power to operate all the machinery at the same time. Two men only are required to attend the combined plant. The entire plant, including power house, lot, reservoir site, rights of way, mains, hydrants, wells, lines, machinery, are light, all included, cost \$55,000. In addition to the public and private consumption of water, two busy railroads are consumers. All customers are served by meter and therefore there is practically no waste.

There can be no doubt that water taken by air in this manner is purified to some extent, the admixture of air serving to oxidize and destroy organic matter. Samples of the water taken last January are still bright and sparkling, have no odor and remain apparently unchanged. There probably is not another town of 5000 inhabitants in the country that has a better or more complete combined water and light works. Certainly there is not another town of any size on the banks of the Ohio River from Pittsburgh to Cairo that has better water, if as good.

The works have been in constant operation since January last and have been visited by many interested parties. The system demonstrated at Point Pleasant will beyond a doubt be repeated elsewhere. That it is regarded as a paying enterprise we have but to repeat the president's statement made to the writer a week ago, "There is no stock for sale, and not a single share was sold at less than par." The pump and compressor were built by the Stilwell-Bierce & Smith-Vaile Company of Dayton, Ohio.

What has been accomplished at Point Pleasant can be done at hundreds of other small towns similarly situated where there is no water works. Here it has been demonstrated that bright, sparkling water can be obtained from a muddy, filthy stream without the use of chemicals or mechanical filters.

Just use the filter nature has so abundantly supplied at the bottom of such streams, and by proper arrangement of the pumping system combined with an electric lighting system, thus economizing the operating expenses to a minimum, establish first-class water and electric service on a paying basis when neither separately would pay operating expenses.

The air lift system is undoubtedly the simplest as well as the best of all known methods of serving such towns with good water. Nor is the system less applicable to larger towns, as well as to factory and domestic supply.

Artesian wells, or wells supplied from land sources, generally yield hard water or water highly charged with mineral salts. The water at Point Pleasant is soft, pleasant and wholesome. The railway companies using it speak very highly of it. It is simply Ohio River water freed of filth and all objectionable matter that renders it so disgusting at many towns along the stream.—*The Metal Worker*.

### Dr. Pritchett's Inaugural Address.

#### As President of the Massachusetts Institute of Technology.

The formal inauguration of Dr. Henry S. Pritchett, former chief of the United States Coast and Geodetic Survey, as president of the Massachusetts Institute of Technology took place on October 24 in the new Symphony Hall in Boston. A distinguished company was present, consisting of representatives of colleges and universities from all parts of the country and of the alumni, the entire main body of the hall being filled by the students, 1250 or more in number. Brief addresses were made by Senator Henry Cabot Lodge, by Col. Thomas L. Livermore, on behalf of the corporation, and by former President Crafts. The principal feature, however, was, of course, the inaugural address of the incoming president.

Dr. Pritchett's practical experience as director of perhaps the most important purely scientific branch of the Government service rendered his inaugural address upon "The Relation of Educated Men to the State" peculiarly suggestive. His insistence upon the obligations of the institutions of higher learning to maintain about themselves an atmosphere favorable to the growth of a wholesome type of civic virtue is especially appropriate and inspiring coming, as it happens, upon the eve of a national election.

Dr. Pritchett explained that for some years past as an executive officer of the general Government he had been obliged to study the graduates of colleges and of technical schools from the standpoint of their efficiency in comparison with other men rather than from the standpoint of the teacher; from the standpoint of their ability to do things rather than from the standpoint of knowing how to do things. In this capacity he had been forced to consider the relation of educated men to the Government, to compare their service to it with the service rendered by others. He called attention to the fact that a constantly growing proportion of the important places of the Government are passing into the hands of college men, and he asked the question whether the training received in our institutions of higher learning merely gave men increased power or did the college life also fit men for patriotic and loyal and unselfish service to the State.

In considering the question he called attention to the fact that the State represents the whole people, that in this capacity it had given generously to higher education both through the general Government in land grants and through the State Governments by direct taxation. Even our older universities, like Harvard and Yale, had at some time, almost without exception, received aid from the State. Harvard was really founded by the Commonwealth of Massachusetts. The State has therefore, the right to ask what sort of instruction is being given in our higher institutions, and to know that in these institutions men are trained in high ideals of their civic duties.

While maintaining that on the whole the institutions for higher education had justified the aid which they had received from the State, President Pritchett brought forward certain qualities of education upon which he conceived the State had a right to insist and which had not always been remembered. He said: "The State has a right to expect of those educated in a large measure by its aid a decent respect for the service of the State." He deprecated the widespread tendency to belittle Government service and to ascribe lightly the worst motives to public men. "The Government of the United States," he said, "is honestly conducted, and notwithstanding the crudeness of some legislation and the half-hearted service of a few, those who know best the machinery of the general Government have a rational optimism concern-

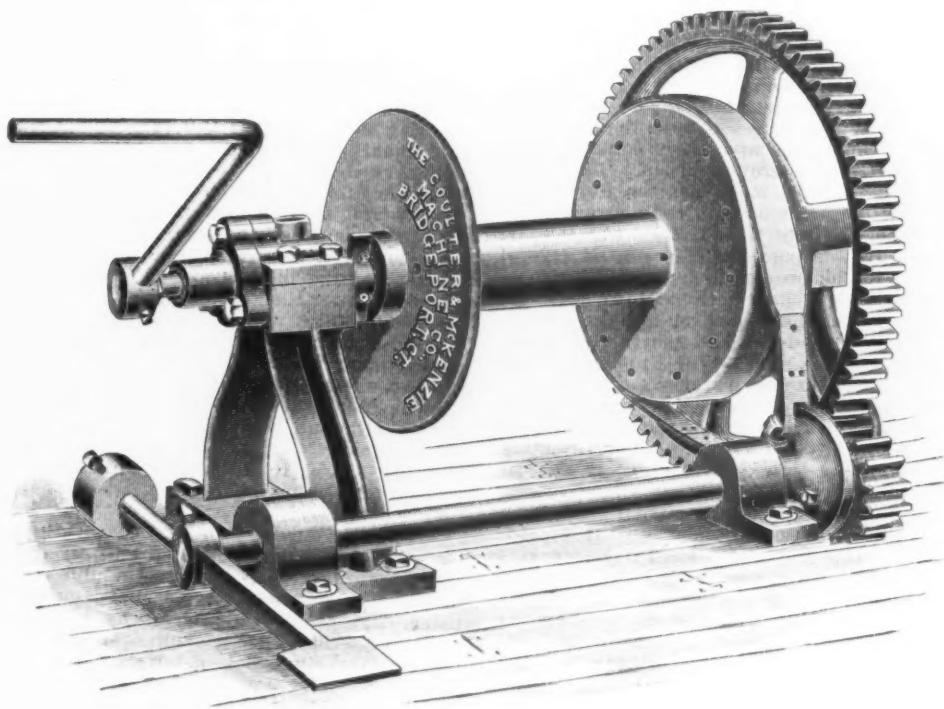
ing the success of democratic institutions and a wholesome respect for those who work in public service. Educated men will find in increasing numbers their best career in the State's service and college men should be the last to misunderstand and belittle it."

Another quality of the education given to the youth upon which the State has a right to insist is its catholicity. "No system of education," said he, "is a good one in which students and graduates get out of touch with the great body of their fellow citizens. The higher institutions of learning, if they are to fill their real place, must be not only for the people but of the people."

Beyond all such considerations, however, and including them all is the quality of citizenship which our education is likely to produce and what education ought to mean. President Pritchett referred to the literature of the subject, quoting Aristotle's summary, "What is education and how are we to teach and how are we to aim at the development of the intellect or the moral character?" He called attention to the fact that the whole aim of modern education was the attainment of power, and to this end the intellect alone was considered in the training given to young men. He said that the State was interested in having in its service keen, efficient, intellectual men, but that it was still more inter-

### The Coulter & McKenzie Portable Hoisting Machine.

A conveniently arranged single drum portable hoisting machine, designed to be operated by power and which can be arranged to be worked by hand, has been built by the Coulter & McKenzie Machine Company of Bridgeport, Conn. The machine can be readily set up in any part of a building, and attached direct to a steam or gasoline engine or motor of any kind, or run with a belt, chain or rope from other engines or shafts and connected with tight and loose pulleys, friction clutch, &c. Engaging with the gear is the driving pinion, which can be placed so as to engage any part of the gear as may be most convenient. The large flange on the drum is filled with blocks of hard wood, turned out V shape, which admit a V shaped ring cast on the side of the large gear, thus making a most durable friction clutch. The holes on the inside of the large flange make it convenient to drive out the wood blocks in the friction, in case they need to be renewed. The drum is controlled by the handle, connected by a coarse thread steel screw, a slight movement of the handle releasing or connecting the drum with the friction. The foot brake allows the operator to hold the



THE COULTER & MCKENZIE PORTABLE HOISTING MACHINE.

ested in finding men of courage and patriotism and unselfishness. In other words, in the service of the State, if not indeed in all service, character counted for more than intellect, and unless the training of the colleges and of the universities produced men who were not only intellectually able, but who were also strong in civic virtue, they fell short of their full duty. "The men who graduate from our higher institutions should, along with the training of their minds, grow into some sort of appreciation of their duties to the State, and they should come to know that courage and patriotism and devotion rank higher in this world's service than scholarly finish and brilliant intellectual power."

President Pritchett then took up in the light of these remarks the character of the training which comes from the study of applied science and called attention to the wise foresight of President Rogers and his associates in estimating the value of a scientific training, not only as a fitting for practical life, but also in its development of character.

Shipments of mining machinery to South Africa have been resumed by Chicago manufacturers. Large quantities of machinery, which could not be delivered because of the South African war, are now going forward, and new orders from the Transvaal region are coming in rapidly. The consignments now being made are intended for Delagoa Bay, East London and Port Elizabeth, to be shipped from there to the interior. Indications point to the receipt of many more orders from the same region, as mining operations regain their old time activity.

load at any desired height, and also to lower at any speed desired. The smallest machine of this type weighs 400 pounds, is 25 inches high and occupies a floor space of 25 x 38 inches. It will hoist from 600 to 1000 pounds, according to the speed. This hoist is built in larger sizes up to 5 tons capacity, with single and double drums, and single and compound gearing.

**The New Columbus Furnaces.**—The Columbus Iron & Steel Company, Columbus, Ohio, lit the fire in the first of their two new blast furnaces on the 17th inst. They made their first cast on the following day, which proved to be good No. 2 iron, showing that the furnace started off very satisfactorily. The capacity of each of these furnaces is 250 tons a day. The second stack is being lined, so that it will be in condition to be started at any time after 30 days. The company have a large stock of the best grades of Lake Superior ores, and are prepared to make standard and malleable Bessemer and foundry grades. They start with good orders booked for foundry and malleable Bessemer. This fine plant was illustrated and described in our issue of May 3. Miller, Wagoner, Fieser & Co. of Columbus, Ohio, and Monadnock Building, Chicago, are exclusive sales agents.

In September there were imported to Great Britain from this country 21,538 gross tons of "unwrought steel," against 11,883 tons in August; 10,200 tons in July, 14,988 tons in June and 2190 tons in May. September pig iron imports were 8829 tons, as compared with 7282 tons in August and 3121 tons in July.



## The Foreign Outlook for American Coal.

### An Interview with William P. Rend.

William P. Rend of Chicago, who has large coal interests in several Western States, has recently returned from abroad, where he has been studying the coal situation. Few men are more competent to form a correct opinion of the strength of the influences now operating to build up a large export trade in coal. What Mr. Rend says is, therefore, entitled to the highest respect. In an interview published in the *Chicago Times-Herald* Mr. Rend is quoted as follows:

"The coal situation throughout Europe has been most serious for some time past. The price in England during the past 18 months has more than doubled. On the Continent of Europe similar advances have been made, but there seems to be difficulty in supplying the demand abroad at any price. The fuel situation in England has become so severe that many of the papers have been agitating the placing of an export duty upon British export coal in order to keep it at home.

"When I was in London I learned that the French Government had, through its agents, made strenuous efforts to buy large quantities of English coal and had not succeeded in the attempt. The Russian Government has also been in the market. In fact, there is a cry and clamor for coal all over Europe.

"The coal scarcity and the consequent heavy advances in selling prices have imposed upon the manufacturers, the railway companies and other consumers of Great Britain a vast and onerous burden. The price, which has advanced from \$3 to \$4 per ton during the past year and a half, has increased in the aggregate the cost of coal consumed in Great Britain from \$400,000,000 to \$500,000,000 during this period. This sum is several times that incurred in the present heavy expenditure of the British Government in its South African war. It has had the effect of closing some of the mills in certain manufacturing localities, and has had the further effect of diminishing the dividends paid by the English railway companies and other British corporations.

"While in London I met several representatives of the American coal interests, who went there to contract for large shipments from this country. The difficulty which confronts the American coal exporter is that of obtaining ocean transportation facilities. The vessels in which our exports and imports are carried are almost entirely in the hands of foreign owners. As the price of coal advances in the European maritime markets there are corresponding advances in the rates of ocean freight from this country. This difficulty undoubtedly will be overcome in the course of a short time by the building of American ships to carry American products and to carry the other commerce of our country.

"It is quite evident that we are now establishing a permanent trade for the shipment of our coal to new markets which have hitherto been supplied exclusively by the British mine owners, who have had the practical monopoly of the world's export coal trade. A short time ago the British mine owners and coal exporters ridiculed the idea of any competition from America. It was claimed that the character of our best American coal is much inferior to the best Welsh and English coals that have hitherto been shipped in the export trade. In order to test the relative merits of our best American coals with the best Welsh coals (which are considered the best produced in Europe) I have had a number of tests made at the University of West Virginia. The results of these tests are most gratifying and impart information that I believe is of general interest.

"I have reports from Prof. Alexander R. Whitehill, the head professor of chemistry of the University of West Virginia, showing the results of the tests he has made of samples of Welsh coal which I forwarded to him, as well as samples of West Virginia coal. I believe these are the first comparative tests of this kind that have ever been made in this country to determine this important question.

"I had thirteen different samples of Welsh coal sent me by the American Consul at Cardiff. The tests of these samples show the following result: The heating power of the Welsh coal shows an average of 8580 calories per gram, or 15,444 British thermal units. The average of the West Virginia coal shows heating power of 8612 calories per gram, or 15,505 British thermal units. This gives a slight superiority of our American coal over the best British coal. It may perhaps be a matter of public interest to know that the Welsh coal tested by the University of West Virginia is the same as that used on the British war vessels, and that the West Virginia coal tested and compared with the Welsh coal is the same as that used on the American war ships."

## The New Factory of the Ludlow-Saylor Wire Company.

The Ludlow-Saylor Wire Company, St. Louis, are rapidly placing themselves in a position to make early and extensive shipments of fly screen cloth for next season's use. They have had in construction for some time past factory buildings on a site having a frontage of 200 feet on the Wabash Railroad and a depth of 500 feet. The property is served by a private switch and has a loading platform 8 feet wide extending along the entire frontage. The present main building is 200 x 75 feet, to which will be added later a building 225 x 75 feet, making the entire structure L shaped. The boiler and engine rooms are at end of main building and separated therefrom by a brick fire wall. A fire wall also divides the boiler and engine rooms. The boilers are two in number of 125 horse-power each. They were built by the Erie City Iron Works, and are equipped with Hawley down draft furnaces. They are set in units flanking the areaway to the engine room, and instead of being brick set are entirely inclosed in 2-inch thick magnesia covering. The boilers have a detached blow off tank, used in common, in which the steam is permitted to escape into the atmosphere and the water to the drainage system. The exhaust steam from the engine is used in a Warren-Webster vacuum feed water heater, purifier and receiver, the boiler feed being a Smith-Valle pump. The motive power for the entire plant is electricity, the generating set consisting of a General Electric Company 250 volt, 300 ampere, multipolar generator direct connected to an Ideal four-ported 110 horse-power engine, running at a speed of 270 revolutions per minute. An additional generator set has been provided for in the boiler capacity. All of the motors hereinafter mentioned are for 220 volt current, and, like the switchboard devices and meters, were made by the Wagner Electric Mfg. Company. The power plant throughout was designed by Herbert A. Wagner, consulting engineer, St. Louis, and the installation of wiring was done by the Frank Adams Electric Company.

The building will be heated by exhaust steam, the pipes being disposed in headers partly overhead and partly along the walls. This installation is in the hands of the Cullen Stock Heating & Ventilation Company, St. Louis. The water supply is independent of the city mains, although connection has been made thereto for an emergency. It consists of a deep well served by a Rumsey & Co. 10 x 16 inch pump direct geared to a 5 horse-power motor running at 1000 revolutions per minute.

Of the basement or first floor of the main building 75 x 150 feet will be devoted entirely to machinery for the manufacture of Perfect double crimped mining cloth. These machines will be disposed in groups of three, each group to be driven by a 15 horse-power motor. The second floor is at present devoted to warehouse use, an extensive stock of wire fencing, barb wire, plain wire, wire nails, &c., being carried. On the third floor there are now in operation power looms for the weaving of Evaporator cloth, light hardware grades, mill screen and the finer grades of mining cloth.

The manufacture of fly screen cloth is being extensively entered into and power looms are in active use for its manufacture. The entire equipment now under way will consist of 100 looms to which four 10 horse-power motors will be assigned. The auxiliary machinery, composed of warp mill, bobbin and spool winder, &c., is already in service. A detached one-story building 40 x 40 feet contains the annealing furnace for the fly screen cloth. From it the material is taken to a two flue tower building, also detached, in which the process of painting is carried on. The tower has a total height of 100 feet, the effective working height being 80 feet.

The American Steel & Wire Company of New Jersey have filed a bill in equity in the United States Circuit Court against the Mayer & Englund Company of Philadelphia, alleging infringement on a patent for certain improvements in rail bonds. Damages to the amount of \$100,000 are claimed, but the complainants ask that the amount of the assessment of damages shall be adjudged at three times that amount on account of alleged willful and unjust infringement. A provisional injunction is asked for pending decision.

A patent infringement suit interesting to blast furnace men has been begun in the United States Circuit Court for the Western District of New York. The Buffalo Furnace Company of Buffalo, and Frank E. Bachman are made the defendants, and Michael Killeen, assistant superintendent of the Edgar Thomson furnaces of the Carnegie Steel Company, is the plaintiff. The patent is known as the metal skimmer for blast furnaces, and was designed and patented by Killeen in 1898.

Standardizing Twist Drills in Germany.

A committee of the Verein Deutscher Werkzeug Maschinen Fabrikanten has drawn up a set of standard measurements for the shanks of twist drills. Their report has been approved by the German machine tool builders themselves, and by the Verein Deutscher Ingenieure, the Verein Deutscher Maschinen-bau-Anstalten. The plan has been followed in a general way to make the taper of the shank 1 in 20 and to adjust the standard dimensions to the metric system. For the smaller numbers, however, the Morse shank has been approached in such a manner that twist drills made in accordance with the new series of dimensions may be used in existing tools. The following table reproduces the dimensions:

Shank with Lip (Fig. 1).											
	1	2	3	4	5	6	7	8	9	10	11
$L = 2 D + 60$	12	18	24	32	40	50	60	70	80	90	100
$l = 0.1 D$	60	80	100	120	140	160	180	200	220	240	260
$d = 0.9 D - 3$	4	4	4	4	4	5	6	7	8	9	10
$a = 0.2 D + 8$	9	14	19	26	33	42	51	60	69	78	87
$b = 0.3 D + 2$	8	10	12	14	16	18	20	22	24	26	28
	5	6.5	8	11	14	17	20	23	26	29	32

Shank with Thread or Wedge Hole (Fig. 2).											
	24	32	40	50	60	70	80	90	100		
$L_1 = 1.8 D + 52$	88	106	124	142	160	178	196	214	232		
$l = 0.1 D$	4	4	4	5	6	7	8	9	10		
$d = 0.91 D - 2.6$	19.6	26.7	33.8	42.9	52	61.1	70.2	79.3	88.4		

Dimensions of Fig. 3.											
	12	18	24	32	40	50	60	70	80	90	100
$L_2 = 1.85 D + 52$	54	71	88	108	126	144.5	163	181.5	200	218.5	237
$l$	4	4	4	4	4	5	6	7	8	9	10
$d_2$	9.3	14.45	19.6	26.6	33.7	42.775	51.85	60.925	70	79.075	88.15

The diameters do not increase by regular increments. In the case of the three smallest numbers the Morse tools may be used. In the case of No. 4, which corresponds to Morse No. 4, this was no longer possible, but since the Morse No. 4 is not frequently used, it may not



Fig. 1.

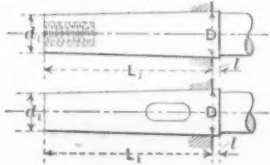


Fig. 2.

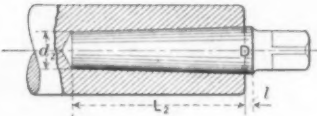


Fig. 3.

make much difference. From No. 5 on the diameter increases per 10 millimeters. The other dimensions are obtained by the formulæ appended.

**The Chicago Coliseum Accident.**—Our readers will recall the fact that about a year ago 11 workmen were killed by the tumbling of the steel arches of the Coliseum building in Chicago, which was then under construction. Indictments were found for manslaughter against Charles M. Peasley, superintendent of construction, and John J. Johnson, the foreman, and the past week their cases came to trial. On Friday the jury rendered a verdict of not guilty under instructions by the judge. The court ordered the verdict on the ground that the indictment was insufficient to support a conviction, stating that if the jury did convict after hearing the evidence the court would have to correct the judgment. The objection to the indictment raised by the attorneys for the defense was that the State could not convict the defendants without showing that the construction of the building was weakened by the absence of certain braces

which had been removed a short time before the accident occurred, and also that the defendants were responsible for their removal.

English Iron Makers' Profits.

"British ironmasters," said Sir Benjamin Hingley recently, "are thoroughly entitled to the present two years' revival, considering the five to seven years' depression preceding." Very few men will be found to contest this point, for, as a general proposition, even English iron works may claim the right to live and to earn for their proprietors a fair average return on the capital sunk in them; and every one who knows anything at all of the trade will realize, without any particular emphasis on our

part, that the effects of a series of lean years take a deal of making up, and that two years of real activity do not go very far in the way of compensation. If proof were required of this, it might be found in the fact that the average dividend—which is the best test of prosperity—of the good and the bad years is anything but handsome—not to be mentioned in the same breath, for instance, with the average distribution in the banking business, and appreciably lower, so far as one is able to find out, than in the textile manufacturing industry. Particular establishments engaged in the production of specialties for use in war and—less frequently—in peace are generally able to maintain dividends at a good and even high level by the aid of well nurtured reserve funds. But they are exceptions, and their results sometimes have the effect of making trade conditions as a whole look more satisfactory to the uninitiated than they are in reality. It is a mistake to assume, because Armstrong, Whitworth & Co. go on paying 20 per cent., that the whole iron trade of the country is in a similar condition of rollicking prosperity. Bolckow, Vaughan & Co. are a better exemplar. At the beginning of the nineties they paid 6 per cent.; then for four years the dividend was no more than 2½ per cent. For 1895 they paid 3 per cent., and for each of the next three years 5 per cent. Last year the distribution was at the rate of 8 per cent., and it seems probable that more will be paid for the current year, because it is during this year that high water mark has been reached. If we put the next dividend down at 10 per cent., we have an average for the decade of a fraction over 4½ per cent.—surely not an extravagant return. It might even be argued that Bolckow, Vaughan & Co. are not the most typical case which could have been adduced, because they are an old established business, well managed and more influential than the general run of iron works. There would be something in the contention, but we have chosen this one firm in order not to overstate the case. Probably 4 per cent. is above rather than below the average for the whole country over a series of eight to ten years, and the cotton and woollen trades can, we believe, boast of a good 2 per cent. more, while it would be easy to enumerate other branches of production in which from 8 per cent. upward is the average.

This relatively low return should be kept well in mind in connection with the run of luck which English ironmasters have enjoyed for the past couple of years. There are other points. The iron situation, as it concerns the makers themselves, apart from the operators at Glasgow, Middlesbrough and other centers, is genuine, and is virtually free from any of the artificial elements which have been created in the coal trade. That is to say, the revival which followed upon the big strike in South Wales filled the order books of both pig iron producers and makers of finished goods; and while the latter have had to complain of few flies in the ointment, the former have, perhaps, come out best because of the abnormal



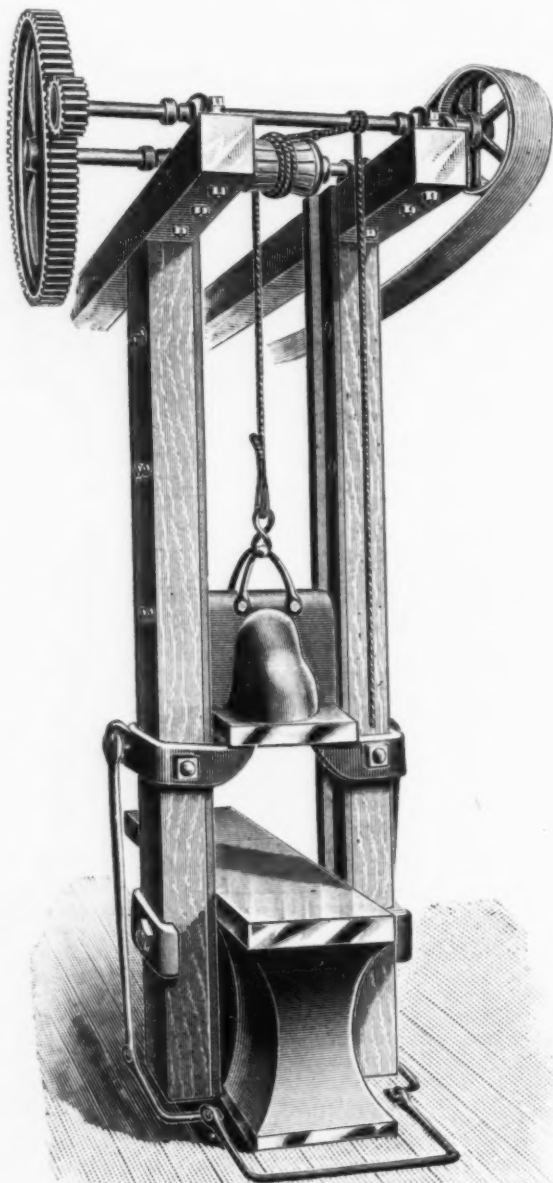
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This leads to the interesting subject of acetylene purification. From the hygienic point of view alone, chemical purification of water to carbide gas, and mechanical purification of the carbide to water gas seem to be imperative. Chemical purification is costly, troublesome and dangerous. Moreover, Dr. Wolff, who has made a special study of the subject, asserts that water to carbide gas cannot be efficiently purified. Simple acetylene generators and portable lamps are useful for experiments and for temporary or outdoor use, when the questions of hygiene and economy are not of much consequence, but when used for regular domestic lighting they will always

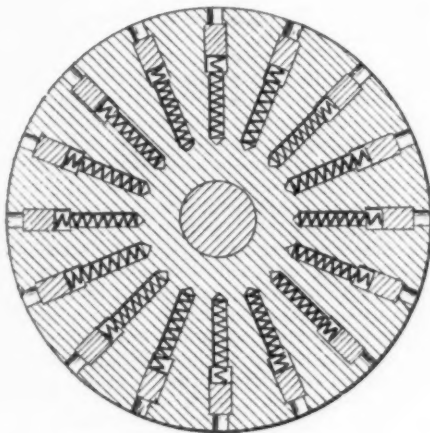


Fig. 2.—Cross Section through Drum.

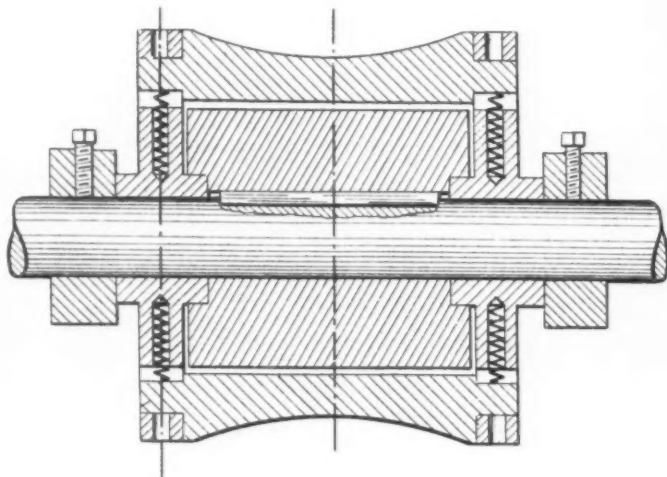


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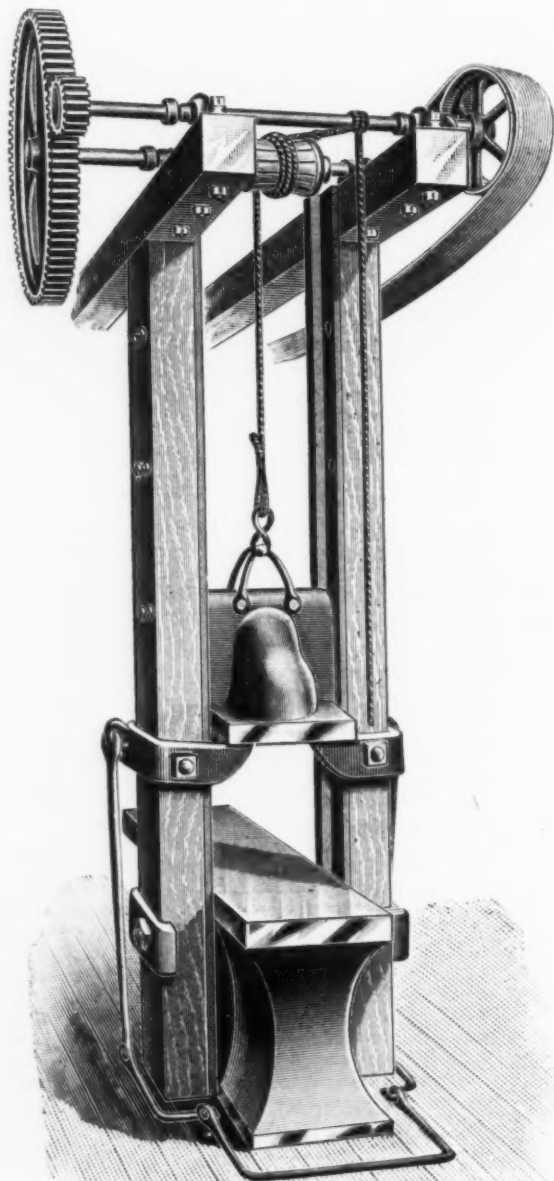
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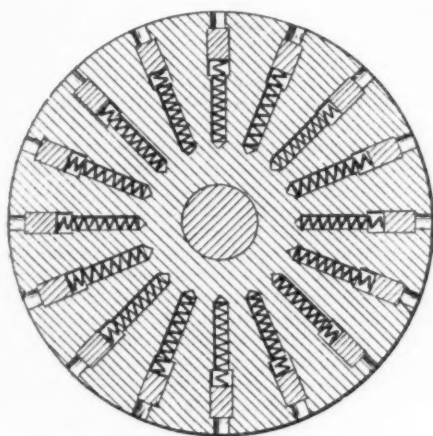


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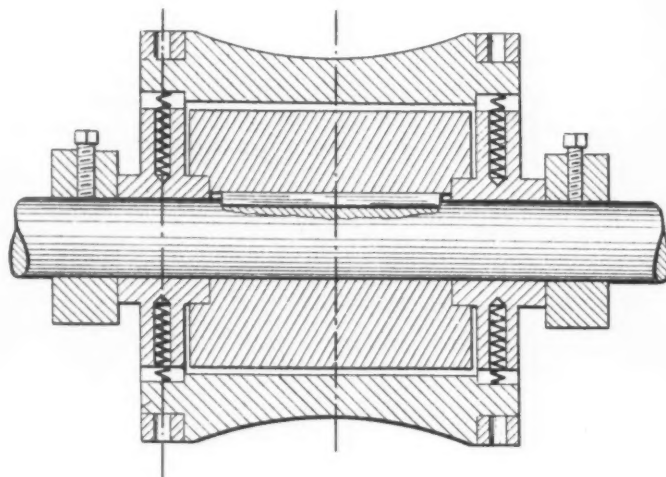


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of it, for efficiently scrubbing and drying the gas, for preventing the loss of gas by solution in the water, for preventing the excessive waste of water, for insuring sufficient protection from moisture for the carbide in the magazine and its constant feeding to the generator without throwing extra work at any time upon the movement of the bell of the gasholder; finally, for the proper disposal of the lime residue without any risk of undue accumulation and for its removal without any risk of gas escaping into the room and air getting into the system.

### Lake Iron Ore Matters.

DULUTH, MINN., October 21, 1900.—Shipments of ore are holding up very well from most ranges, and some are pushing heavily in order to get as much ore down by November 1 as possible. Rates fall off, and the outlook for freights next season is highly satisfactory to the miner. It is probable that November 1 will see a total movement by water for the season quite a little in excess of 17,000,000 tons. This would indicate that 20,000,000 tons for the rail and water movement of the full season is a trifle high. It is probable that the proportionate shipments by States will show a little more in favor of Minnesota than at the close of September, this State increasing its lead slightly.

The Mine Inspector of Marquette County has made his annual report, covering the period to September last. It shows that there were 6627 men working then, at 31 mines and six explorations, that the wages are nearly double what they were in 1896. That year the number of men employed was 4153. The report also shows that during the year 24 men were killed by mine accidents, or a proportion of 3.62 to the 1000. Dickinson County, outside 700 men at Crystal Falls, has 3213 men at 21 mines.

The report of the Mining Inspector of Houghton County, the copper district, shows 14,000 men at work, an increase of 920 over a year ago and of 6722 over 1895. Only 36 accidental deaths occurred in this force in the year. Including mines in adjoining counties there are nearly 20,000 men in the copper mines of Michigan.

Numerous explorations and some mines have been dropped by the larger companies on all lake ranges during the past few weeks. The Manilla Iron Company (Federal Steel) have stopped all exploratory work. This covers the Michigan ranges. The Oliver Company have stopped work at a number of explorations on the Menominee, as have Oglebay, Norton & Co., at Monongahela. The Oliver Company have decreased their force of men at Hemlock and Michigan, near Amasa; Florence has closed down. Dunn & Tobin explorations and development near Crystal Falls by Corrigan & McKinney are closed. The drills and tools of the Manilla Iron Company have been sent to the Minnesota Iron Company, at Duluth, but this company have also closed most of their explorations, continuing at work on but a few, and those the best. The same action has been taken by the Chandler Iron Company, a part of whose stock is held by the Federal Steel Company. It seems to be Federal Steel subcompanies that are curtailing most sharply now. The Minnesota Company have stopped their work at Mesaba Station, where the most rosy reports were early given out by the original lessees, and where the company had employed a number of drills since early in the summer. The Chandler Company have dropped their option on the Rahilly tract, Mesaba range, as noted in this correspondence two weeks ago, and have also let go other tracts in which they were at work vigorously. The reason for this wholesale and concerted action is probably not entirely the condition of the ore market nor the outlook for the future.

On the Gogebic the Colby of Corrigan, McKinney & Co., has closed tight, letting out 300 men, and curtailments continue to come at the Oliver and other mines of the range. Of these the Norrie and Tilden have suffered most. Work at East Norrie is at a standstill, because a fire destroyed the shaft house.

Aside from the Oliver Company's Regent group at Negaunee there has not been much closing of importance on the Marquette range, except for explorations. There have been no reductions of consequence on the Mesaba range other than those caused some time ago by water, and none at all on the Vermillion, except an exploration or two.

What is supposed to be a large field of ore has been made at the Mikado Mine, Gogebic range, now under development by Pickands, Mather & Co. The Mikado has been worked in what were always supposed to be small and minor lenses, and the main body of ore has been industriously searched for. This find is believed to be the main deposit, and the shaft will be retimbered and the mine put into shape for extensive exploration. The James exploration, at Iron River, Menominee range,

abandoned under orders from headquarters by the Manilla Iron Company, has been optioned by T. J. McCusker, and he will continue the very favorable explorations of the past few months. At the Hartford Mine, Negaunee, the Oliver Company continue work steadily. The 800-foot vertical shaft is now down 240 feet; the old 200-foot shaft has been deepened to 340, and is still sinking; commodious buildings are under way, a 20-drill Rand compressor and a Prescott pump are on the ground; a coal dock is completed and preparations are such as to indicate that no temporary movement in the ore market will stop the work of development.

The Mesaba is moving along much as usual, although toward the end of the week a sharp curtailment became manifest. Shipments have been very heavy, mining operators pushing ore forward to fill contracts with shipping before November 1, and the docks are exceedingly busy. The month will be a large one in spite of early drawbacks. The Fayal and Mountain Iron are especially active. It is not likely now that the Mahoning will reach 1,000,000 tons for the year, and the Biwabik has closed with about 915,000 tons to its credit. The Adams is drawing close to 750,000 tons, and the two chief Oliver properties will get out about 1,200,000 tons. The Union Mine is grading for a large stock, and will probably raise 100,000 tons during the winter.

There will be a number of new mines on this range in another year, mines that should be able to produce in 1901 if desired not less than 800,000 tons, the list including the Stevenson and Clark, which have been producing somewhat this season. The Union, Sharon, Wyoming (which may not be its name) and some others are absolutely new. At the Spruce they are erecting some fine new buildings and making preparations for heavy work. The mine has a fine steel headworks put in by the Wisconsin Bridge & Iron Company.

The Canton and Duluth mines, the latter an active property, met a severe loss from a cyclone that carried off No. 1 shaft house and the engine house at Duluth and a shaft house, engine house and several other buildings at Canton. Duluth shipments are stopped for the season. The loss at both shaft houses and engine houses was complete, everything being swept off.

The Drake & Stratton Company, earth contractors, have now about 4,000,000 cubic yards of work in hand on the range, divided into 1,000,000 yards at the Biwabik, 1,500,000 at the Fayal, 1,000,000 at the Stevenson and 500,000 at the Sharon, as well as some more at the Auburn. The company are using 11 large steam shovels, 40 to 50 small locomotives, mostly Porters, and several hundred cars. Nearly 1500 men have been on their pay roll all summer, and the rate of wages for common labor has been from \$1.75 to \$2, at which figure it now rests. At the Biwabik Mine alone the company have moved 900,000 yards since they began work for the season in April, and they have had four, and at times five, shovels there. This year's dump at that mine alone has filled a piece of ground 1400 feet long and averaging 500 feet wide to the depth of 40 feet. At the Fayal an immense work is under way, and at the Stevenson they are making a very important mine of what was five months ago a forest. The same is true at the Sharon, where a mine of the highest importance is being developed for another year. This company, though doing such an immense amount of work, are not the only stripping contractors on the range; Winston & Dear have the work at the Mahoning, and are utilizing a new outfit of equipment valued at \$35,000. The stripped area of the mine is being largely increased. There are also one or two other stripping contractors on the range.

The last ore of the year to go from the Helen Mine, Michipicoton range, will be carried down early next month. The four steamers of the Algoma Commercial Company, operating the mine, are the boats chartered by the Carnegie Steel Company for delivering a load of finished steel at English ports in November. The company have completed their preliminary survey from the Helen Mine location to the Canadian Pacific Road, 80 miles, and the contract has been let to Jas. Conmee. The line from the Sault Ste. Marie, north to a connection east of the Helen Mine, is under way, and nearly 50 miles of steel have been laid thereon.

The United States Geological Survey is working on the Mesaba range, under the supervision of C. E. Van Hise, and with H. K. Leith in direct charge. It is hoped to have the field work completed in another year. Judging from results so far attained it is probable that a good many theories will be assailed by the survey, especially as to the genesis and disposition of Mesaba ores.

The Baltic, Isle Royale and Mass mills should be completed and put to work by next spring, fine progress is being made with them. The Mohawk, Champion, Trilmountain and other mills will come later, probably the following year.

It is expected that coppers will pay dividends for the year amounting to about \$9,618,000, of which, of course,

Calumet and Hecla easily leads, with a probable dividend of \$7,000,000, less than the preceding year on account of the fire at No. 2 Hecla. The Quincy has paid \$900,000 and the Tamarack will pay \$840,000.

It is probable that a concerted movement will be made, in which both iron and copper mines of Michigan will take part for an equalization by the courts of the assessment put upon the mines by the State Board, and of which mention has been made in this correspondence.

D. E. W.

### A New Crucible Steel Plant.

For some time past representatives of Seeböhm & Dieckstahl, Limited, proprietors of the Dannemora Steel Works, at Sheffield, England, have been in Pittsburgh looking for a site for a new plant to be built by this concern to take care of their American trade. Seeböhm & Dieckstahl, Limited, are manufacturers of high grade crucible and spring steels, and have for some years enjoyed a very large trade in this country. In order to better take care of this trade and extend it the firm have decided to build a new works in this country, and have selected the Pittsburgh district as the best place in which to locate it. A definite site has not been selected, but it can be stated that the new works will be built within a radius of a few miles of Pittsburgh. No contracts for equipment or buildings have yet been placed. It is probable, however, that the project will be put through to build a modern crucible and open hearth steel plant for the manufacture of high grades of crucible and open hearth steel. The statements in the Pittsburgh papers that 5000 to 6000 men would be employed are very much exaggerated.

**The Block Mfg. Company.**—(By Telegraph.)—CHICAGO, ILL., October 24, 1900.—The newly incorporated Block Mfg. Company have purchased from the Midland Rolling Mill Company the rolling mill plant at Cragin, a suburb of Chicago, including land, improvements and machinery. The company have a capital stock of \$130,000 and will continue to manufacture the same products as the Midland Company—namely, merchant bar, small angles, &c., from old steel rails. The principal owners in this company are also interested in the Inland Steel Company of Chicago and the Buffalo Steel Company of Buffalo, N. Y. The organization of the company has not been completed, but the officers will probably be P. D. Block, president; G. H. Jones, vice-president, and L. E. Block, secretary and treasurer. The company's office is in the Marquette Building, Chicago.

The Patterson Coal & Coke Company, with a capital of \$1,000,000, of Hamilton, Ont., have been chartered at Trenton, N. J. The incorporators are John Patterson, Gabriel H. Levy and F. C. Lowthrop. The company are of local interest and take the New Jersey charter because of the fact that they are to develop upward of 2000 acres of coal property near Tarentum, in the Allegheny Valley. The company will soon open this coal and ship it to Hamilton, Ont., where the coal will be converted for coke and by products. These interests have been buying coke in the Connellsville district for years and have decided that they can afford to pay freight charges on the coal produced here and convert it at Hamilton. There a plant of 300 coke ovens is to be erected.

Dr. H. P. Hulst, who has charge of the mining operations of the Oliver Iron Mining Company of Pittsburgh, says that on November 1, when shipments from their ore properties will cease, they will have produced 5,000,000 tons, or within 250,000 tons of the total amount of ore required by the Carnegie Steel Company of Pittsburgh at their blast furnaces for a whole year. Practically nothing will remain of the mine stock piles, as shipments have so nearly kept pace with production that the ore can nearly all be cleaned up before lake navigation closes. Dr. Hulst says that during the season now closing little has been done in the way of developing new mines on any of the Lake Superior ranges. Where there has been development work done it had in view the increasing of the shipping capacity of old mines. As a result those mines producing Bessemer ores are in better shape than ever before to turn out ore rapidly and at low cost.

The time for the completion of the 12 new torpedo boats under construction for the navy has expired, but they are not yet ready. Six of the new vessels have not even been launched. The chief cause of the delay is said to lie in the inability of the builders to secure the machinery. By the contract these boats should have been completed on October 1 last year, but this date was extended for 12 months. It is expected that a further extension of six months will be granted to the builders.

### PERSONAL.

Chr. Hille of Dahl, Jorgensen & Co., Christiania, Norway, is now in this country.

Among those who have been elected to Parliament are the following, conspicuously identified with the iron and metal trades: Sir James Kitson, who was president of the Iron & Steel Institute when that body visited the United States; J. S. Randles, managing director of the Moss Bay Hematite Company; A. B. Law, a partner of William Jacks & Co., iron merchants, of Glasgow; Lawrence Hardy of the Low Moor Works; C. S. Henry, the English representative of the Lewisohns in London; Arthur Strauss, the famous tin king, and Sir Alfred Hickman of Wolverhampton.

Willard A. Fuller has resigned his position as blast furnace manager of the Maryland Steel Company at Sparrows Point, Md.

W. J. Taylor of the Taylor Iron & Steel Company, has returned home from Europe.

Theo. Shaffer, who sent in his resignation as president of the Amalgamated Association, of Pittsburgh right after the Cincinnati conferences, is still at the head of that body, but it is understood will vacate his office in a short time. The administration of Mr. Shaffer is regarded by a majority of the members of the Amalgamated Association as decidedly unsatisfactory. John Buckley of Sharon, Pa., is being put forward as a candidate for president of the organization.

Chas. Hubbard, president of the American Axe & Tool Company, who is a resident of New York City, will probably live in Pittsburgh this winter, in order to be in close touch with the progress of work on the new plant now being built by the American Axe & Tool Company at Glassport, Pa.

Thomas P. Egan, president of J. A. Fay & Egan Company of Cincinnati, Ohio, has just returned from abroad on the "New York." Mr. Egan has been in Europe nearly five months, having, during his visit, taken an active interest in his firm's exhibit of wood working machinery at the Paris Exposition, for which the Grand Prix was awarded. While abroad Mr. Egan made an extended tour of England and the Continent, visiting all his firm's agents and incidentally becoming more familiar with the wants of the various countries.

An important change was made on Monday, October 22, by the Carnegie Steel Company by the consolidation of all the plants operated in Homestead and vicinity under one management. Heretofore the Homestead Steel Works and the Carrie furnaces have been under one management, while the Howard Axle Works has been operated under a separate management. In the future W. E. Corey, superintendent of the Homestead Steel Works, will be the general superintendent of the Homestead Steel Works, the Carrie furnaces and the Howard Axle Works. The change in the arrangement of these plants, and their consolidation under one management, while not considered of any material importance, places Mr. Corey at the head of the most important of the Carnegie Steel Company's plants.

Thomas Parrock, formerly district manager at Youngstown for the American Steel Hoop Company, has resigned, and has been appointed district manager for Republic Iron & Steel Company, succeeding James A. Campbell, resigned, and embracing Youngstown, New Castle and Sharon.

Guy R. Johnson, the retiring superintendent of the blast furnaces of the National Steel Company, at Youngstown, Ohio, who will take charge of the Duquesne furnaces of the Carnegie Steel Company, at Duquesne, Pa., has been presented with a gold watch by the employees of the blast furnaces of the National Steel Company, at Youngstown.

Webster R. Balsinger, chief of ordnance department of Carnegie Steel Company, sailed for Europe on Wednesday, October 24, to be gone about two months. Mr. Balsinger will combine business with pleasure, and while on the other side will look after some pending foreign contracts for armor plate. The statement that he would visit Andrew Carnegie at Skibo Castle is untrue, as Mr. Carnegie will have sailed for this country by the time Mr. Balsinger lands on the other side.

Spencer Miller, chief engineer of the Cableway Department of the Lidgerwood Mfg. Company, New York City, has returned from Europe after a four months' absence. It is understood that his latest invention, the marine cableway for coaling at sea, will be taken up by several of the navies of Europe.

J. Mitchell Clark of Naylor & Co., New York, who went abroad in May, has just returned.



# The Iron Age

New York, Thursday, October 25, 1900.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	-	EDITOR.
GEO. W. COPE,	-	-	-	-	-	-	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	-	-	-	-	-	-	HARDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	-	BUSINESS MANAGER.

## Silverism Not Self Consistent.

It is to be hoped that the education of the American people in the elements of monetary science has been nearly completed, and that it will not long be necessary to press upon the public attention the fundamentals of currency. Among all the discussions of gold and silver and bank notes there was no considerable difference of opinion among Americans regarding the essential nature and functions of money until the Civil War. The Government had previously issued notes, but never before had it made them a legal tender; not till the Civil War had the Continental currency and the legal tenders of the Colonies been forgotten.

The legal tender law is the cause of all the misinformation that has prevailed for over 30 years and has several times brought the country into great peril. To that law is attributable the impression that money does not derive its usefulness from its own value, or its promissory character, but from the "fiat" of the Government, and while the Greenback party ceased to be dangerous many years ago the delusion of the potency of the Government stamp to make money regardless of the value of its material, or the commodity in which it is redeemable, has been the inspiration of silverism for a quarter of a century.

The power of the Government was limited to giving a debtor clearance from his obligation upon the tender of certain notes; what those notes would purchase the Government could not determine; it depended upon the prospect that the notes would be redeemed—for even the legal tenders are promissory notes—and the value of the commodity in which they may be redeemed. The power of the Government to keep gold and silver dollars in circulation at the same value depends, not on the national coat of arms impressed upon both, but upon its monopoly of the coinage of one of the metals, and the discretion with which coins of this metal are put into circulation by the Government.

Currency does serve the purpose of counters in effecting exchanges between individuals, but nothing has ever served well the purpose of a counter unless it possessed real commercial value and the sale was an actual barter of the labor or merchandise for such merchandise as gold or silver, present, or represented by book credits, or by notes entitling the holder to specified amounts of the gold or silver. The operations of buying and selling easily give the impression that money serves only as counters, but no man would give up his labor or his goods in exchange for counters unless he knew approximately what those counters could be exchanged for. Prices are always liable to fluctuate, but the amount they can vary within a short time is limited, so that the man who is exchanging his labor or merchandise for gold or silver is exchanging them for tolerably well known amounts of other labor or merchandise. The effort to induce men to give up their work or goods for counters simply has been often tried, and has always failed for reasons that ought to have been obvious

enough, in spite of the beclouding effects of a paper currency.

Silverism is simply a part—and an inconsistent part—of Greenbackism. It is inconsistent because, if currency circulates for its own value, it is evidently impossible that a gold piece and a silver piece should each be current for a dollar when the metal of one of them is worth twice as much as the metal of the other. On the other hand, if currency circulates on account of the stamp it bears, then it is palpably extravagant for the Government to put its stamp upon silver when so cheap a material as paper would bear the stamp.

Silverism is grossly inconsistent in another respect. It rests upon the "quantitative theory" of money, the greater the volume of currency the greater the prosperity. Now without considering the point that free silver coinage would drive gold out of monetary use if the gold dollar were, as bullion, worth more than the silver dollar, it is sufficient to notice that the amount of silver money, as well as of gold money, would be limited, and that if the "quantitative theory" of money be true the currency should be paper, which cannot be exported or melted, and the volume of which Congress can increase at any moment. Silverism is the most untenable currency notion that has ever become current, for it does not rest upon uniform human experience, as the advocacy of the single gold standard does, nor does it rest upon a self consistent theory as the "flatism" of the Greenbackers does.

## Coal Exports and Ocean Shipping.

The hope is entertained that the long desired revival of the American merchant marine may be hastened by the rapid growth of our coal export trade. The increase in this trade with European countries is phenomenal. According to the Bureau of Statistics, our export of coal to all Europe in the calendar year 1899 aggregated but 35,322 tons, whereas in the first eight months of the present year the quantity sent to the same destination was 375,761 tons. For the month of August alone the figures were 97,180 tons, or 175 per cent. more than for the whole of the year 1899. It is asserted by coal interests that the movement to Europe would be much larger if freight room were available. They are unable to take complete advantage of the favorable conditions abroad for shipping American coal by reason of the limited facilities afforded for this class of transatlantic business. So much shipping has been diverted to other parts of the world to meet military exigencies that the transatlantic mercantile marine is at last inadequate for the traffic offering. Our iron and steel export trade has for some months been checked by the scarcity of available shipping and the accompanying high freight rates, and for some time the coal export trade has been another and perhaps stronger influence in making freight room hard to get and preventing freight rates from dropping to reasonable figures. We have seen the time when foreign tramp ships were so abundant that many of them were tied at docks in the principal ports waiting for cargoes, but the necessities of war and the increasing commerce of the world have given them all continuously profitable employment. The cry now is for more ships, and this cry seems to come loudest from our own people.

The conditions certainly seem to be more favorable for building American ships for the foreign carrying trade than have been experienced for half a century. One by one the obstacles have been removed or the necessary favorable influences have developed. We have a deficiency in the supply of ships for the world's traffic and a steadily growing export trade in American prod-

ucts of almost every description as the fundamental elements of the proposition. Other essentials in the work of re-establishing our ancient position in the world's carrying trade we undoubtedly possess, such as an abundant supply of shipbuilding materials available at low cost, an ample force of skilled workmen capable of performing all the work required in building ships, an increasing number of men trained in designing ships and operating shipyards, and a vast amount of unemployed capital seeking investment. All that is now required is the confidence of capitalists in the financial returns to be obtained from ventures in ship owning. If they can be satisfied on this point it may be expected that steamship companies will be formed to engage in our foreign carrying trade on a scale commensurate with other American commercial undertakings. From time to time we hear of a contract being placed for a vessel or two designed to engage in this trade. Only lately announcement was made that the Maryland Steel Company had received an order for two large cargo carriers. But the movement so far has been very slow. It needs much more impetus to enable the United States to take at an early day the place it should occupy in ocean navigation. Considering the position of this country in supplying the needs of the world, its merchant vessels should outnumber and outclass those of any other nation.

Some great force is almost always needed to start the energies of a people in any particular direction. It has been claimed that less force is necessary with Americans because of their adventurous spirit, which leads them to make hazardous commercial risks. But in the matter of engaging in the ocean carrying trade they have been conspicuously conservative. They have seen their country's foreign commerce grow steadily from year to year, sometimes making great bounds, but never falling back, and all the while enabling the shipping interests of other countries to thrive until some of the navigation companies thus built up are among the greatest commercial enterprises of the age. As these great enterprises have failed to invite serious competition from American capitalists, it would seem that at last pressure is to be applied by American freight seeking an outlet. If the coal trade proves to be the potent factor in diverting American enterprise and energy to the upbuilding of an American merchant marine, the country will be a much greater gainer than from the mere increase in its exports through sales of coal abroad. In this question the iron and steel trades have a vital interest.

### The Public Discussion of Strike Issues.

The difficulties experienced in ending the anthracite strike are due in great part to the fact that, at the beginning of it, there was a great deal too much said by and on behalf of the operators, with a view to influencing public opinion. It is evidently the purpose of the union leaders that the mine owners, and especially the managers of the coal properties operated by the railroads in control of a large share of the anthracite business, shall "take their medicine," as the phrase goes. Their purpose in this matter is no doubt influenced largely by a desire to balance the account opened by the operators in their appeals to the public through the newspapers. Much was said at that time which will be remembered by the miners long after it has been forgotten by others. Even a settlement of the issues involved in the present strike will not mean as lasting a peace as it might have done had there been no bitterness created by the public discussion in which the operators took part so freely. It will be a long time before the satisfaction resulting from making the operators

yield every point they originally refused and declared impossible of consideration will cease to be a cause for congratulation to the strikers.

The coal operators were not deliberately indiscreet in this instance. The fact that everything affecting the coal business is a matter of public interest, and that the more sensational newspapers took the matter up and made much of it, gave them somewhat unusual opportunities of airing their views, of which they made a more liberal use than was consistent with prudence. The result was that a great many things were said which it would have been better to have left unsaid. The public was not in any sense a party to the controversy, and could do nothing to decide it. Under the circumstances it would have been much wiser for the operators to have kept silent and let Mr. Mitchell and his assistants do the talking. He was reasonably certain to have the advantage in such a controversy, for the reason that in stating grievances he had much greater latitude than a due regard for facts afforded those who represented the mine owners. The result was that public sympathy has been with the miners from the first, and since this was inevitably so prudence would have suggested a dignified reticence rather than a labored and diffuse defense of customs and usages which admitted of no other explanation than that they were satisfactory and profitable to the operators, who desired to perpetuate them. We do not imply that in this contest the miners were wholly right or the operators wholly wrong, but it requires no great intelligence to discover that in any appeal to the public the miners had the advantage, which would have been unimportant if their *ex parte* presentation of their grievances had been allowed to pass unchallenged.

It is wise to remember that great issues between employers and wage earners are not decided by the newspapers. In this instance powerful influences, wholly outside the coal trade, favored the men by making it expedient for the operators to make concessions which they could safely have refused had their interests warranted an obstinate defense of their position. This, however, has no bearing upon the question of the general inadvisability of conducting disputes with wage earners in the public prints. On the contrary, it only serves to emphasize the wisdom of discretion in avoiding an unnecessary proclamation of unalterable purposes and irrevocable ultimata in the beginning of labor troubles. We recall many instances in which strikes growing out of issues which could have been settled easily and quickly by a little discreet diplomacy have been embittered and protracted by too eager a desire on the part of the employers to put the men in the wrong before the public. It very seldom happens that men surrender employment and encounter the hardships of voluntary idleness unless they believe that a good and sufficient reason exists for so doing. However mistaken they may be, it is usually wiser to let them find it out than to tell them so. A little patience and consideration goes a long way toward smoothing the asperities of strained relations, and employers can, as the rule, make no greater mistake than that involved in trying to defeat a labor union by talking it down. The union leaders have a vocabulary of their own, and generally know how to use it to good advantage. In a "scolding match" the men always have the advantage of their employers; and in every issue between them the advantage of the latter will be found in a dignified, courteous and patient insistence upon discussing issues only with the accredited representatives of those immediately concerned.

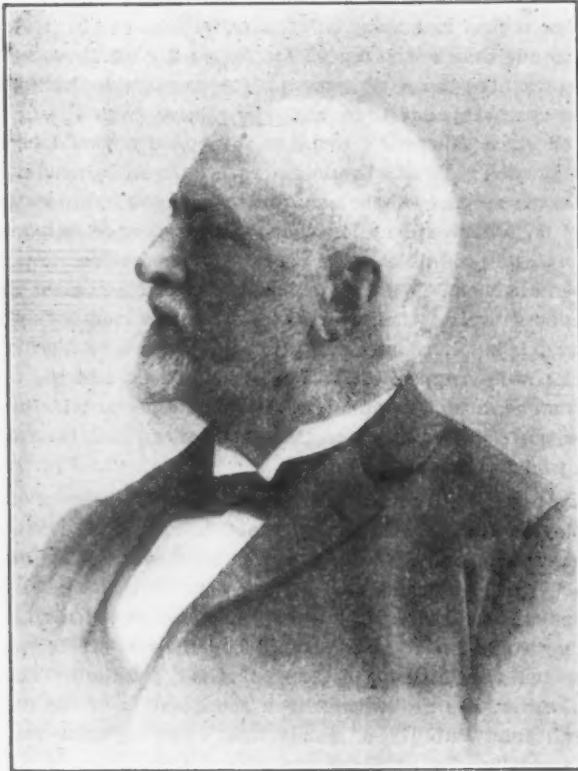


## OBITUARY.

JOHN SIMMONS.

John Simmons, president of the John Simmons Company, 110 Centre street, New York, died suddenly at his residence, 190 New York avenue, Brooklyn, on Sunday evening last. Mr. Simmons was born in Wexford County, in the North of Ireland, in 1834, and came to this country with his parents when a child. He received his early education in the public schools of New York, and began his business career with the firm of Hunter, Keller & Co., manufacturers of steam heating supplies, with whom he remained for 25 years. On the dissolution of the firm, in 1880, he established himself as their successor, and his business, subsequently organized as the John Simmons Company, is now one of the strongest houses of this character in the country.

This firm have recently erected under a separate organization a 50-ton foundry plant in Newark, N. J., where they expect to employ about 250 hands in the manufacture of cast iron steam pipes and fittings and



JOHN SIMMONS

sanitary castings generally. They also control the Powhatan Brass & Iron Works, Charlestown, W. Va., of which Chas. H. Simmons is treasurer. At these works they manufacture a full line of brass works of every description for steam and water. After a period of ten years from the establishment of this concern, necessitating constant improvement and increase in the plant and the addition of new and improved machinery, the business was incorporated in 1891 under the style of the John Simmons Company, with John Simmons president, Chas. H. Simmons treasurer, and John S. Simmons secretary.

ELIAS COSPER.

Elias Cosper, secretary and treasurer of the Rockford Tack Company, died at his home in Rockford, Ill., on the 12th inst. He was born near Wooster, Ohio, in 1824, served through the Civil War, was interested in various manufacturing lines in Rockford after the war and subsequently became interested in the Rockford Tack Company, greatly contributing to the company's success by his business ability.

The report is absolutely untrue that the Republic Iron & Steel Company have shut down their rolling mills at Alexandria, Ind. The mills are running full, with plenty of specifications booked. The report is also untrue that the company propose to install machinery in the Westernman works, at Marion, Ind., for the manufacture of chains.

## Low Carbon Chrome Steels.

Jacob Holtzer & Co. of Unieux, France, have at the Paris Exposition a large and very varied exhibit of objects almost exclusively in crucible cast steel. The basis of the manufacture is charcoal pig iron from Ria, in Corsica, which is partly converted into steel by puddling, but principally by cementation and fusion in crucibles. Gas melting furnaces are used containing 30 to 32 crucibles, each one admitting of the production of ingots up to 6 tons. Among the most notable objects, in addition to the famous Holtzer projectiles, are castings for the framing of T. B. D. engines, cylinder cones for large marine engines, deck and shield plates for naval guns, and a remarkable series of tests of steels with varying proportions of chromium from 5 to 30 per cent., the carbon being kept constant at 0.4 per cent. by the use of a special alloy. The mechanical properties of these alloys are shown in the following table:

Chromium.		Elastic limit.	Break'g stress.	Elonga- tion.	Contraction.*
Per cent.	Condition.	Tons per square inch.	Tons per square inch.	Per cent.	
5	Annealed	17.8	31.8	24.0	0.240
	Hardened and tempered	48.8	55.2	12.0	0.370
10	Annealed	22.9	42.0	21.5	0.440
	Hardened and tempered	42.4	54.3	12.9	0.536
15	Annealed	25.4	45.3	18.5	0.500
	Hardened and tempered	48.8	58.1	11.5	0.546
20	Annealed	21.2	36.1	21.5	0.465
	Hardened and tempered	27.6	40.3	19.5	0.515
25	Annealed	29.8	42.2	18.0	0.621
	Hardened	27.6	40.4	20.0	0.500
30	Annealed	31.8	41.6	19.0	0.620
	Hardened	28.8	39.0	19.0	0.650

\*Ratio of fractured to original section.

These alloys have been made with pure chromium produced by the reduction of chromic oxide with aluminum, a very fine example of the metal being exhibited with the specimens.

## Fairmont Coal & Mining Company.

The coal operators of the Fairmont range of West Virginia have organized the Fairmont Coal & Mining Company, who will handle the output of 39 of the largest mining plants in that State. The product amounts in round numbers to nearly 10,000,000 tons annually. The capital invested by these interests is said to be about \$10,000,000. Plans of the new company promise formidable competition for the Pittsburgh Coal Company.

The Fairmont Coal & Mining Company have organized with the following officers and directors: C. W. Watson, president; John A. Clark, vice-president; George De Bolt, secretary; M. L. Hutchinson, treasurer; J. A. Flickinger, J. H. Wheelwright, W. M. Hite, F. S. Landstreet, W. P. Young, J. F. Jones, E. F. Lowrie and J. O. McKinley. Mr. Flickinger is chairman of the Executive Board, with Watson, Clark, Hutchinson and Wheelwright completing the board.

Among the interests going into the Fairmont Coal & Coke Company are the Montana Coal & Coke Company, owning 13 mines; Monongah Coal & Coke Company, owning five mines; Clark Coal Company, operating five mines; Hutchinson Coal & Coke Company, owning six mines. There are ten other mines owned by individual operators.

The National Association of Bridge and Structural Iron Workers met in Pittsburgh on Monday, October 22. More than 30 organizations were represented by delegates. Reports were submitted by John Butler, president, of Buffalo, and E. J. Ryan of Boston, vice-president, while the report of W. J. Pryle, secretary and treasurer, showed a large increase in membership and a surplus in the treasury. Some of the delegates will urge during the sessions a uniform wage rate. There is a wide range in prices paid for structural labor, ranging from 30 cents to 50 cents an hour. The organization of the American Bridge Company is expected to facilitate the adoption of a uniform wage rate for iron workers.

The *Iron and Coal Trades Review* reports that an effort is being made to effect a consolidation of the interests of all the English and Scotch steel plate makers. Those behind the movement express the confident opinion that the combination can be carried out successfully. Should the British makers consolidate their interests all contracts would be pooled, so that competition would be avoided, prices would be maintained, costs reduced, and foreign competition would be met by a united body, instead of by separate units, all fighting for their own hand, and therefore antagonistic to the best interests of the trade as a whole. The capital involved would run into many millions of pounds sterling.

## MANUFACTURING.

### Iron and Steel.

A report has been current that the Glasgow Iron Company of Pottstown, Pa., had decided to operate the basic Bessemer steel plant of the Pottstown Iron Company. While the Glasgow Iron Company have leased the entire plant of the latter, there is no intention to run the Bessemer works. They do propose to make some changes and improvement in the blooming mill.

The Penn Iron Company, Limited, Lancaster, Pa., have reduced wages of their puddlers from \$4 to \$3.50 a ton.

The plate mill of the Republic Iron & Steel Company, at Sharon, Pa., has been started up. It has been idle since July.

Edward E. Erikson, consulting engineer, Garrison Building, Pittsburgh, has taken a contract from the Columbia Iron & Steel Foundry Company of Pittsburgh for the building of a ten-ton open hearth steel furnace. The brick will be supplied by Frank E. Pope, general sales agent of the Savage Fire Brick Company for Pittsburgh and vicinity.

We are officially advised that the report that the American Steel Casting Company would concentrate their plants at Sharon, Pa., and Alliance, Ohio, is untrue. It is possible that within a year the Pittsburgh works may be removed to a place where more ground is available for enlargements. This, however, is not certain.

The report that the Republic Iron & Steel Company had made an arrangement by which they would keep the cut nail factory at their Mahoning Works, in Youngstown, idle is untrue. This concern have not entered into any agreement or combination with anybody in reference to any of their plants, or any of the departments they are in, to reduce their operations, and more particularly with regard to their nail plant at Youngstown.

The Champion Rivet Company of Cleveland, Ohio, have been granted a charter with a capital stock of \$100,000. The company take over a former partnership.

Within a week Jones & Laughlins, Limited, will begin taking hot metal from their Eliza Furnaces across the Monongahela bridge to their Bessemer plant on the South Side, Pittsburgh.

The business men at Washington, Pa., have signed a petition asking the American Tin Plate Company to start up the tin mill at that place. It is a small plant and has not been operated for some time.

Some improvements will be made to Atlantic Furnace of the Atlantic Iron & Steel Company, at New Castle, Pa. A new engine house is to be built, which will be 50 x 80 feet long and 50 feet high, and will have a traveling crane for handling the parts of the blowing engines. It will be of iron and brick construction.

The report that the Pittsburgh Forge & Iron Company of Pittsburgh had made a material reduction in wages of axle makers is untrue. As a matter of fact, this concern have made no reduction in labor in their works beyond a slight readjustment of piece work prices for axle cutters and axle turners. No more than 20 men were affected, and the change was made on account of increased facilities and was an entirely amicable arrangement between the men and the firm.

The strike at the Shenango Furnace in Sharpsville continues, and some 40 Italians who went up from Sharon a few days ago to work in the furnace were set upon by the strikers and badly beaten.

The courts have delivered an opinion bearing upon the affairs of the Pottsville Iron & Steel Company, at Pottsville, Pa. On October 21, 1899, the court confirmed the sale of the mills and the furnaces of the company to the Brown-Shelmerdine syndicate of Philadelphia for \$37,800. The sale was subject to a first mortgage for \$85,000 and accrued interest in favor of Harriet J. Atkins. The court awarded the entire proceeds of the sale to the Safe Deposit Bank of Pottsville, as trustee, less the necessary costs.

In the United States Circuit Court in Pittsburgh, suit has been commenced by James W. Friend against Henry B. Shields of the Continental Iron Company, at Niles, Ohio, and Wheatland, Pa., to recover \$25,000 on a mortgage. It is claimed that the plant cannot be sold except by Jas. A. Campbell, who was recently elected trustee by the creditors.

Mary Furnace of the Ohio Iron & Steel Company, Lowellville, Ohio, will be blown out this week on account of dullness in the pig iron trade.

The Youngstown Works of the National Tube Company, at Youngstown, Ohio, have been started up in full in all departments. Since the closing down of this plant the National Tube Company have expended a large amount of money on repairs and additions to equipment. Two new furnaces were built and two others thoroughly overhauled. Gas producers of the Duff type have been installed and two hydraulic cranes of the Craig Ridgway design of 3 and 5 ton capacity have been set up. Other improvements were made, and this plant is now in splendid condition for a long run. Walter L. Kaufman is superintendent.

W. A. Thomas of Niles, and Jas. Patterson, who was formerly superintendent of the sheet mill of the Struthers Iron &

Steel Company, at Struthers, Ohio, are organizing a company for the purpose of building a three-mill sheet plant in Niles, Ohio. It is understood that most of the capital for the new project has been subscribed, and that contracts for the machinery and buildings will be placed shortly after the election.

The American Sheet Steel Company, at their Vandergrift Works, at Vandergrift; the Apollo Works, at Apollo, and the Kirkpatrick Works, at Leechburg, Pa., are employing at the present time about 2500 men, 2000 of whom are on the pay rolls at Vandergrift and the balance at Apollo and Leechburg. S. A. Davis is superintendent of the three plants.

The National Steel Company are making improvements at their Thomas Furnace, at Niles, Ohio, that will cost about \$30,000. The stack, when ready for blast, will be blown in on Bessemer iron, and is expected to turn out about 300 tons a day. As to when the furnace will blow in, however, is very uncertain.

Spang, Chalfant & Co., Incorporated, operating the Etna Iron & Tube Works, at Etna, Pittsburgh, are preparing a large order for shipment to India. It contains about 1200 tons, and consists of 8000 pieces of 7-inch trolley poles, 13 feet long. They are for the Electric Railway Supply Company of India.

Articles of incorporation were filed on October 20 under New Jersey laws of the International Iron & Steel Company, with a capital of \$3,000,000. The incorporators are William E. Hingston, Charles H. Tuttle and N. M. Collins.

### Machinery.

The Wagner-Palmrose Mfg. Company, Fairmont, Va., are putting up a large factory for the production of coal mining machinery, of which the concern are making a specialty. They have secured a very valuable site in Fairmont, on what is known as the Development Company's property. At the present time they are operating a plant which they purchased from the Fairmont Machine Company and whom they have succeeded.

A company by the name of the Moore Drop Forging Company are being organized in Springfield, Mass., by A. L. Moore, for many years manager of the Springfield Drop Forging Company. Preliminary officers have been elected as follows: President, H. E. Marsh; treasurer, A. L. Moore; secretary, F. S. Sibley. Others interested are T. W. Leete, C. T. Shean and G. M. Hendee.

The Means & Fulton Iron Works, Birmingham, Ala., have completed the building of a new shop on a lot 300 x 355 feet, at North Birmingham. The machine and erecting department is 100 x 116 feet and the supply house 24 x 116. The office is in a detached building 20 x 40 feet. On the south side of the shop there is a track of the Southern Railroad and on the north side one of the Louisville & Nashville road.

The Dimmick Pipe Company, Birmingham, Ala., who commenced making pipe in their principal foundry on August 17, are at present operating three pits and will in a few days have the fourth pit in working order, when the whole will be kept at their full capacity. Orders are being received from almost every State in the Union, shipments now being made to New York State, Ohio, Virginia, California, Louisiana, Minnesota and Vancouver, B. C. The company are manufacturing all sizes of pipe from 3-inch to 24-inch diameter.

Forster, Waterbury & Co., Franklin Park, Ill., are arranging to make important additions to their malleable castings plant. The improvements contemplated are a foundry, 75 x 200 feet; machine shop, 40 x 200 feet; forge room, 60 x 100 feet, and a cleaning room, 38 x 80 feet.

The Columbus Malleable & Gray Iron Casting Company, Columbus, Ohio, have started up their new plant and expect to turn out about 100 tons of product per month. The equipment of the plant is said to be modern in every respect.

The Michigan Central Railroad Company, it is announced, propose to expend \$20,000 in improvements on their machine shops at Jackson, Mich.

The organization of the Milwaukee Forge & Iron Company, Milwaukee, Wis., has been completed. This company will have a capital stock of \$300,000. Fred C. Starke, formerly of the Sheriffs Mfg. Company, will be president. The company intend to manufacture steamboat shafts and piston rods, dredging machinery and heavy forgings for machine shops. They expect to be able to handle heavy work which now has to go to Cleveland or further East. The plans for the company's buildings have been made and contractors are now figuring on the work of construction.

The Milwaukee Bridge & Iron Company were incorporated at Milwaukee, Wis., on the 17th inst., with a capital stock of \$25,000, for the purpose of manufacturing and erecting bridges. The incorporators are Herman P. Hostman, John L. Lawson and W. F. Suckow.

The Taylor & Morris Company, Janesville, Wis., have been reorganized and are now known as the Rock River Machine Company. The new company have been incorporated with a capital stock of \$15,000 and will not only continue the business of the old company but will also engage in new lines. They have purchased machinery for the manufacture of shears, punches and other iron working machines. The officers are as follows: President, R. H. Morris; vice-President, Geo. H. Marsden; secretary and treasurer, Frank B. Strickler. Mr. Strickler was formerly connected with the Janesville Hay Tool Company.



The Beaver Dam Malleable Iron Company, Beaver Dam, Wis., have built a fine plant of most substantial character to replace the old works destroyed by fire some months since. The new works are composed of brick and steel and are fire proof. They are equipped with three air furnaces having a melting capacity of 15,000 tons per annum. The annealing room and foundry are furnished with pneumatic cranes and motors for the economical and expeditious handling of materials and product. The company are making a specialty of railroad castings.

The Baker Iron Works, Los Angeles, Cal., have decided to double the capacity of their plant by adding to their machinery equipment. They propose to engage in the construction of steam engines. Their specialty is the manufacture of oil well supplies.

The Filler & Stowell Company, Milwaukee, Wis., are endeavoring to secure additional property adjacent to their engine works for the purpose of making extensive improvements in their plant. They are particularly desirous of enlarging their foundry.

A report is current that the International Power Company of New Jersey, operating the Rhode Island Locomotive Works and the Corliss Steam Engine Works, Providence, R. I., are about to remove these plants to Trenton, N. J., where the company already have a large establishment. The report has created quite a stir in business and laboring circles, but attempts to verify it have thus far proved unsuccessful. George Hoadley, one of the officers of the corporation, was seen a few days ago in relation to the matter, but refused either to affirm or deny the truth of the statement. He hinted that the company had in view a combination of all their plants at a central point, but did not specify or give any inkling as to where that point might be. President Hoadley said it was a question for the citizens of Providence to decide whether this centralization would be made in their city or at some point in New Jersey. Subsequently the large Worcester plant was brought to Providence, and this was taken to mean that the latter city was to be the favored place. One of the reasons given by members of the corporation remaining in Providence was the large number of skilled machinists to be found there, many of whom had spent the greater portion of their lives in the manufacture of engines and locomotives. Both plants operated by the Power Company were closed for more than two years before they were purchased by that company, and as they used to employ several thousand men, most of whom had families dependent on them, the result was "hard times" in Providence. During the two years they have been in the city they have brought to it an immense amount of money and little has been heard of the hard times previously existing. Their removal at this time would be a great loss to Rhode Island.

The McMyler Mfg. Company, Cleveland, Ohio, manufacturers of dock equipment machinery, are contemplating removing their works to Warren, Ohio, but have not come to a definite decision in the matter. It is likely, however, the plant will be removed.

The Lake Shore Engine Works, Marquette, Mich., are installing two Westinghouse motors, 50 and 20 horse-power, which will furnish sufficient power to run the entire plant. A new cupola is also being installed.

The Logan Mfg. Company, Phoenixville, Pa., manufacturers of steel castings, are making some extensive additions to their plant. They are extending their main foundry building half its present length, which will give them additional floor space of 50 x 100 feet. They will install a new cupola furnace and a new 2-ton Tropenas converter. They are building a new core oven, which will double their present drying capacity, and have extended their railway siding to meet the extension to the plant, and have also added some accessories in the way of sand blast apparatus, &c. The new addition is to be equipped with pneumatic cranes and hoist. Contracts for all this material have been let, and the foundations for the addition to the building are already under way. The firm expects the building addition to be completed by December 1, and the cupola and converter to be installed before that time, and to be ready for use within five weeks.

Wm. Tod & Co., Youngstown, Ohio, have received a contract from the Washburn Wire Company of East Providence, R. I., for a 1000 horse-power engine. This firm have also many other contracts for engines, and are running their shops full time.

The Lorain Foundry Company, Lorain, Ohio, manufacturers of rolls and rolling mill machinery, are operating their plant full time with non-union men.

Bids for pumps with a daily capacity of 12,000,000 gallons were opened in Pittsburgh last week. The bidders were the Wilson-Snyder Mfg. Company of Pittsburgh, whose price was \$252,000; Henry B. Worthington Company, Brooklyn, N. Y., \$218,500, and the Camden Iron Works of Camden, N. J., \$237,500. Specifications for these bids were taken by 12 pump companies, but only the above three submitted bids, the others reporting that they were too full of work to take on additional contracts. It is probable contracts for these pumps will be placed in a short time.

The Westinghouse Machine Company have been awarded the contract for the engines, and the Westinghouse Electric & Mfg. Company, both of Pittsburgh, for the electrical equipment for the new Union Depot being built in Pittsburgh. The Union Switch & Signal Company, at Swissvale, Pittsburgh, also a Westinghouse interest, will provide the interlocking plant and signals.

The first properly equipped machine shop and foundry in Brewton, Ala., has just been erected. The proprietors are P. J. Costello and M. H. McArdle, both being practical men in the two branches from Wisconsin. The purpose, at first, is to do repair work only and gradually commence to build stationary engines, pumps, &c.

#### Hardware.

Although the plant of the American Axe & Tool Company, now building at Glassport, Pa., near Pittsburgh, is not completed, and will not be until early next year, the concern have decided to erect additional buildings, making the plant much larger than was at first intended. The new addition will be in the shape of a two-story building, 715 feet long and 150 feet wide, with steel frame, brick walls and slate roof. The main building now under roof is 400 feet long and 310 feet wide. Other smaller buildings are in course of erection, and the machinery equipment is being placed in the new building. It is expected to have a portion of the new plant ready for operation in February. When the whole works are completed a very large force of men will be employed.

The State Line Talc Company, Chattanooga, Tenn., have recently enlarged their plant in order to be able to meet the increasing home and foreign demand for their goods. They are the manufacturers of the Wonder and the Acme acetylene burners.

Phoenix Hardware Mfg. Company, Phoenix, N. Y., have purchased the curry comb and hose band business of the Frontenac Mfg. Company, Syracuse, N. Y., including plant, stock, patents and good will. The Phoenix Company will continue the manufacture of these goods and endeavor to give the trade the best satisfaction in this line.

The Austin-Bryan Mfg. Company, Birmingham, Ala., manufacturers of plows, steel blades, flat shapes and special steels and implements, began operations on September 1. They have their steel and iron working departments completed and in full operation and have already begun the installation of their wood working department. They are now prepared to fill promptly all goods in their line. E. J. Bryan, the president of the company, was for many years prominently identified with the mercantile interests of New Orleans and Louisiana. W. E. Austin, vice-president and treasurer, has been for the last 25 years engaged in the manufacture and distribution of agricultural implements, and is well known to the heavy jobbing trade. Jack W. Evans, secretary, was for a long time in the office of one of the leading agricultural implement houses of the South, and has an intimate knowledge of the business.

#### Miscellaneous.

The Pittsburgh Coal Company have placed contracts for building their new coal car works at Montour Junction, on the Pittsburgh & Lake Erie Railroad, near Pittsburgh. The works will be used largely for the repairing of coal cars that the company use, and will also make a small number of new coal cars, probably 300 each year. The main building will be 60 x 100 feet, and will be used for the building of cars. An engine shed will adjoin it and will be 45 x 125 feet. A brick car repair shop 50 x 300 feet will also be erected. In addition there will be a power house, 35 x 60 feet; a two-story office building, 20 x 60 feet, and a record steel building, 23 x 33 feet. The buildings will cost close to \$60,000, while the machinery with which they will be equipped will amount to nearly \$100,000. The plant will cover about 7 acres. Orders for the lathes, wood working machinery and electrical apparatus are now being placed. Electricity will be used as the principal motive power.

Elmer E. Stanton, an attorney of Grand Rapids, Mich., informs us that he has under promotion the Grand Rapids Steel Ceiling & Ornamental Works, which it is proposed to organize with a capital stock of \$25,000. It is probable that if the project is put through the plant will be located in Grand Rapids.

The old Paterson Iron Works have been bought by Charles E. Beckwith, George D. Beckwith and James D. Shields. Congressman Charles D. Beckwith, the former head of the concern, has retired to a farm in Sullivan County, N. Y. The old company failed for \$118,000. Among the unsecured creditors were the late Vice-President G. A. Hobart, who lost \$20,000, and ex-Sheriff William A. Hopson, who lost \$10,000. The new firm have purchased the works for \$59,000.

The General Electric Company have secured the contract to erect and equip the plant for the Guadalajara Tramway Company, at Guadalajara, Mexico. The entire contract is valued at \$460,000.

We are officially advised that the Pressed Steel Car Company of Pittsburgh have received an order for 600 cars from the Chesapeake & Ohio Railroad, to cost about \$600,000. The contract calls for 400 gondola and 200 self hopper clearing cars. Each is to be of 100,000 pounds carrying capacity. Deliveries of the cars will commence in December.

The Tubular Axle Company have been incorporated in New Jersey with a capital of \$200,000. The incorporators are E. H. Benners, A. D. Keys, both of Elizabeth; E. G. Whittaker of New York. E. G. Whittaker, attorney, New York.

The New York Steel Corner Plate Company of New York City have been incorporated with a capital of \$50,000, to do a contracting and building business. The incorporators are Charles R. Hoffman, Hugh W. Tweedy and A. G. King of New York City.

## The Iron and Metal Trades.

Aside from some irregularities, the general trend of affairs in the Iron trade has been in the direction of greater activity and added strength. Some very good orders have been taken and there has been clear evidence that some discounting of an expected improvement later on is being done.

In the Southern Iron trade there has been a sudden change of front on the part of one Pig Iron interest, and a cut in prices has been made to effect sales. Relatively speaking, Northern Irons have been below the parity of the Southern metal, so that the bulk of the business has been taken by the latter. Under the stimulus of lower prices the volume of sales has expanded.

In the Cast Iron Pipe trade the item of greatest interest is that bids have been called for until November 1 for about 30,000 tons of Pipe for Brooklyn and for the Bronx.

There has been more inquiry for Steel Billets, and nominal quotations are higher than they have been. A report is current that a meeting of the leading Billet makers has been called to be held in this city to-morrow, at which the principal Eastern and Western Steel makers are to be present. An effort is to be made to advance the price of Billets to \$19.50 to \$20, makers' bill.

There has been another spell of placing of shipbuilding orders. Two very large boats, probably ocean colliers, have been placed with the Maryland Steel Company, and the new yard on the Delaware has taken two smaller vessels. This has brought out some very notable Ship Plate orders and has rendered the Philadelphia market more active.

Very little that is definite is available in the trade on this side of the Atlantic relative to the large Government orders for South Africa in which American competition is troubling English makers. Some figuring is going on, but nothing has been settled as yet.

In the export trade reports indicate that in Steel Billets, &c., the Germans have lately appeared in Great Britain with very low offers. The collapse of the boom on the Continent naturally leads to raids elsewhere, to keep the home market from breaking.

Some good orders for Structural Material have been placed at home. Among them is one lot of upward of 5000 tons for a structure on the Hudson River. Generally speaking, recent reports relative to Bars, Sheets, Wire and the smaller lines show a very healthy consumption.

In the metal trades Tin has again cut capers and has declined further. Copper is still very firm, but it is difficult to escape the conclusion that the pronounced check to industrial activity in Germany must have its effect upon the metal. The Germans claim, and statistics bear them out, that in recent years their country has become the largest single consumer of the red metal.

## A Comparison of Prices.

At date, one week, one month and one year previous.

### Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Oct. 24, 1900.	Oct. 17, 1900.	Sept. 26, 1901.	Oct. 25, 1900.
<b>PIG IRON:</b>				
Foundry Pig, No. 2, Standard, Philadelphia	\$15.00	\$15.00	\$15.50	\$22.75
Foundry Pig, No. 2, Southern, Cincinnati	12.25	13.00	13.25	20.75
Foundry Pig, No. 2, Local, Chicago	14.50	14.50	14.50	23.00
Bessemer Pig, Pittsburgh	15.00	13.25	13.50	24.50
Gray Forge, Pittsburgh	12.25	12.50	13.00	21.00
Lake Superior Charcoal, Chicago	18.00	18.00	18.00	25.00
<b>BILLETS, RAILS, ETC.:</b>				
Steel Billets, Pittsburgh	16.75	16.50	16.50	39.00
Steel Billets, Philadelphia	20.00	19.50	19.25	41.50
Steel Billets, Chicago	19.50	19.50	19.50	.....
Wire Rods, Pittsburgh	33.00	33.00	33.00	.....
Steel Rails, Heavy, Eastern Mill	26.00	26.00	26.00	35.00
Spikes, Tidewater	1.45	1.45	1.40	2.65
Splice Bars, Tidewater	1.25	1.25	1.25	2.25
<b>OLD MATERIAL:</b>				
O. Steel Rails, Chicago	10.50	10.50	10.00	20.00
O. Steel Rails, Philadelphia	14.00	13.75	12.75	22.50
O. Iron Rails, Chicago	16.00	16.00	13.50	28.00
O. Iron Rails, Philadelphia	16.50	15.50	15.50	30.00
O. Car Wheels, Chicago	15.50	16.50	16.00	20.00
O. Car Wheels, Philadelphia	16.50	15.50	16.00	22.00
Heavy Steel Scrap, Chicago	10.00	10.00	10.00	17.00
<b>FINISHED IRON AND STEEL:</b>				
Refined Iron Bars, Philadelphia	1.25	1.25	1.25	2.10
Common Iron Bars, Youngstown	1.25	1.20	1.25	2.15
Steel Bars, Tidewater	1.30	1.20	1.25	2.40
Steel Bars, Pittsburgh	1.10	1.10	1.15	2.35
Tank Plates, Tidewater	1.30	1.30	1.25	2.00
Tank Plates, Pittsburgh	1.10	1.05	1.10	2.75
Beams, Tidewater	1.05	1.05	1.05	2.40
Beams, Pittsburgh	1.50	1.50	1.50	2.25
Angles, Tidewater	1.55	1.55	1.55	2.40
Angles, Pittsburgh	1.40	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh	1.40	1.40	1.40	2.00
Skelp, Sheared Iron, Pittsburgh	1.50	1.45	1.40	2.40
Sheets, No. 27, Chicago	3.05	3.05	3.05	3.15
Sheets, No. 27, Pittsburgh	2.80	2.80	2.80	3.05
Barb Wire, f.o.b. Pittsburgh	2.80	2.80	2.80	3.55
Wire Nails, f.o.b. Pittsburgh	2.30	2.30	2.30	2.95
Cut Nails, Mill	1.95	1.95	1.95	2.50
<b>METALS:</b>				
Copper, New York	16.75	16.75	16.75	17.37½
Spelter, St. Louis	4.40	4.00	3.98	5.10
Lead, New York	4.37½	4.37½	4.37½	4.57½
Lead, St. Louis	4.22½	4.22½	4.27½	4.45
Tin, New York	27.50	27.95	28.80	30.75
Antimony, Hallett, New York	9.50	9.50	9.50	9.75
Nickel, New York	55.00	55.00	55.00	36.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.82½

### Chicago. (By Telegraph.)

Office of The Iron Age, 1205 Fisher Building, {  
CHICAGO, October 24, 1900. }

A peculiar feature of the situation is that a number of manufacturers have oversold themselves. This is seen in Pig Iron, Merchant Bars of certain sizes and some other classes of manufactured products. Engagements were made for deliveries which could not be fulfilled. The buyers have therefore been obliged to cover themselves in other quarters. More independence is exhibited by sellers. They show less anxiety to secure business. Another interesting feature is the heavy buying by railroad companies, who are freely ordering cars and locomotives. It is believed that they will also soon decide to place orders for Rails, as inquiries are increasing and the price fixed for next year is gradually being regarded with less dissatisfaction.

**Pig Iron.**—Nearly every consumer of Pig Iron seems to be interested in the market. Inquiries are in hand covering a very large tonnage. It is stated that over 50,000 tons are in sight, without including inquiries from Malleable interests. Some of this tonnage will be placed soon, but it is likely that much of it will be deferred until after the election, unless prices show signs of advancing, which would then cause the conservative buyers to quickly make up their minds. It is confidently expected that trade will be very good for the remainder of the year. Some of the contracts recently taken at very low prices are not being filled to the satisfaction of buyers, who have had to purchase from other manufacturers at higher rates. This is a natural accompaniment of a market in which consumers are almost without exception running without stocks and are depending on steadily receiving shipments. The large furnace companies are holding prices firmly, the only bargains now offered being small lots by owners of furnaces out of blast who desire to clean up their stocks. The sales of the week comprise some good sized blocks of Malleable Bessemer, but the stream of small orders from the general trade has been constant. Quotations are as follows:

Lake Superior Charcoal	\$18.00 to \$18.50
Local Coke Foundry, No. 1	15.00 to 15.50
Local Coke Foundry, No. 2	14.50 to 15.00



Local Coke Foundry, No. 3.....	14.00 to	14.50
Local Scotch, No. 1.....	15.00 to	16.00
Ohio Strong Softeners, No. 1.....	16.00 to	16.50
Southern Silvery, according to Silicon.....	15.50 to	16.50
Southern Coke, No. 1.....	15.00 to	15.35
Southern Coke, No. 2.....	14.00 to	14.35
Southern Coke, No. 3.....	13.50 to	14.10
Southern Coke, No. 1 Soft.....	15.00 to	15.35
Southern Coke, No. 2 Soft.....	14.00 to	14.35
Foundry Forge.....	12.75 to	13.50
Gray Forge and Mottled.....	12.25 to	12.50
Southern Charcoal Softeners, according to Silicon.....	15.50 to	17.50
Alabama and Georgia Car Wheel.....	20.85 to	21.85
Malleable Bessemer.....	14.50 to	15.00
Standard Bessemer.....	14.50 to	15.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	18.00 to	19.00

**Bars.**—Manufacturers are being favored with good orders for Bar Iron, which are running into a very fair tonnage. The Republic Iron & Steel Company continue to start up idle mills to keep pace with their growing business. They state that the report is incorrect that they have shut down their mills at Alexandria, Ind. The plant is running on full time. A large implement manufacturer is placing an additional order this week to cover more of his season's requirements. The demand for Steel Bars continues excellent and in some cases scarcity has developed in certain sizes. Contracts are being replaced with other manufacturers so as to insure more rapid delivery. Quotations on both Iron and Steel Bars are now being made subject to immediate acceptance. Quotations are not permitted to stand over night. The situation looks so encouraging to manufacturers that they believe the demand in a short time will warrant higher prices. Mill shipments are still quoted at 1.35c. to 1.40c. for Common Iron, 1.35c. to 1.40c. for Soft Steel Bars, and 1.95c., base, Chicago, for Hoops. A typographical error was made last week in quoting 1.45c. for Hoops. Jobbers are enjoying a lively demand from stock, with a good sprinkling of orders for direct shipment from mills. The heavy withdrawals from stock are compelling urgent demands for prompt shipment from mills to keep up assortments. Store prices are maintained at 1.65c. to 1.75c. for Common Iron, 1.50c. to 1.65c. for Steel and 2c. to 2.20c. for Hoops.

**Billets.**—Nominal quotations on ordinary 4 x 4 inch Billets are continued at \$19.50 to \$20, but the Steel situation is reported to be firmer, and it is believed that higher prices will soon prevail.

**Structural Material.**—The demand from outlying towns for small lots of building shapes continues quite active. Such orders seldom call for more than 200, to 300 tons, but the amount of business secured in this way is quite gratifying. A heavy business is now being done with car builders and manufacturers of railway supplies, who are receiving such numerous orders for their products that they are compelled to place frequent orders to cover their requirements. Quotations, mill shipments, are as follows: Beams, Channels and Zees, 15 inches and under, 1.65c.; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.35c.; Tees, 1.70c.; Universal Plates, 1.35c. From local yards small lots of Beams and Channels quoted 2.15c. to 2.35c.; Angles, 1.80c. to 1.90c. rates, and Tees, 2c. to 2.20c.

**Plates.**—An increased tonnage is being taken by all kinds of consumers and prices show signs of hardening. The largest mills are very full of work, some of them reporting their capacity covered for the remainder of the year. Mill shipments of Tank Plates are still quoted at 1.25c., Chicago, in some cases, but the leading Pittsburgh manufacturers are now stated to be asking the equivalent of 1.33c., Chicago, as their minimum. The differentials on other classes of Plates are being firmly maintained. Jobbers report a good demand from stock which is keeping their forces busy. Small lots from store are quoted at 1.50c. to 1.60c. for Tank and 1.90c. to 2c. for Flange.

**Sheets.**—Galvanized Sheets are in particularly strong demand. Good orders are being sent to the mills and Jobbers are likewise having a heavy movement from store. Black Sheets are in fair demand, with inquiries in hand indicating a much larger business in the near future. Mill shipments of No. 27 Black Sheets are quoted at 3.05c., Chicago, and Galvanized Sheets at 75 per cent. off. Jobbers quote small lots from store at 3.10c. to 3.15c. for No. 27 Black; 2.10c. to 2.20c. for No. 16; 1.85c. to 2c. for Nos. 10 to 14, and 70 and 5 to 70 and 10 off for Galvanized.

**Merchant Steel.**—Manufacturers are having a good run of small orders. They report their mills so well supplied with work that considerable independence is shown in taking new business. One large company declined to quote on an inquiry for 1000 to 2000 tons because the works are not now in a position to be able to guarantee delivery within a reasonable time. Good specifications are being received on contracts and the

outlook is considered very satisfactory. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.75c. to 1.90c.; Smooth Finished Tire, 1.75c. to 1.95c.; Open Hearth Spring Steel, 2.15c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.70c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c. Ordinary grades of Crucible Tool Steel are quoted at 6c. to 7c., Specials 13c. upward.

**Merchant Pipe.**—The demand keeps up very well, a particularly heavy movement being reported from local stocks. Manufacturers' prices, random lengths, are as follows:

	In carloads.	Less than carloads.
	Bk. Galvd.	Bk. Galvd.
1/4 to 1/2 inch and 11 to 12 inches.....	59.2	46.2
3/4 to 10 inches.....	66.7	53.3
	54.9	40.9

Jobbers' prices on Boiler Tubes, which were reduced last week, are maintained at the new schedule. It is asserted that the next change will be an advance. Quotations are continued as follows:

	Steel.	Iron.
1 to 2 1/4 inches, inclusive.....	50	40
2 1/4 inches.....	50	42 1/2
2 1/2 to 5 inches.....	60	50

**Cast Iron Pipe.**—All classes of consumers are now sending in small orders for prompt shipment, which are running up the volume of delivery business to good figures. This demand will continue as long as the weather is favorable for doing outdoor work. It is not expected that contracts for quantities will be placed until later in the year, when projects for new enterprises or extensions of old ones will come up for next year.

**Coke.**—The demand for Coke continues heavy. Quotations for 72-hour Coke are \$4.50 to \$5, Chicago.

**Rails and Track Supplies.**—Inquiries for Heavy Sections of Steel Rails are increasing and it is expected that considerable tonnage will soon be placed by the large Western railroad companies. Light Rails are in continued active demand, frequent orders being placed for 10 to 12 miles of Track. Minimum prices of Light Rails have been marked up 50c. Heavy Sections are quoted at \$26 and Light Sections at \$25.50 to \$28, according to weight. Track Supplies are quoted as follows: Splice Bars, 1.30c. to 1.35c.; Spikes, 1.75c. to 1.85c.; Bolts, Hexagon Nuts, 2.40c. to 2.50c.; Square Nuts, 2.30c. to 2.40c.

**Old Material.**—The market for the higher grades of Old Material is strengthened by the orders coming from a few large manufacturing consumers who are in need of material and who are taking special grades. It is believed that after these requirements are filled prices will recede. Most consumers of Scrap are well covered. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$16.00 to \$16.50
Old Steel Rails, mixed lengths.....	10.50 to 11.00
Old Steel Rails, long lengths.....	13.00 to 13.50
Relaying Rails.....	18.00 to 20.00
Old Car Wheels.....	15.50 to 16.00
Heavy Melting Steel Scrap.....	10.00 to 10.50
Mixed Steel.....	8.00 to 9.00
Iron Fish Plates.....	15.50 to 16.00
Steel or mixed do.....	11.50 to 12.00
Iron Car Axles.....	10.00 to 10.50
Steel Car Axles.....	15.50 to 16.00
No. 1 Railroad Wrought.....	14.50 to 15.00
No. 2 Railroad Wrought.....	12.50 to 13.00
Shafting, Iron and Soft Steel.....	17.00 to 17.50
No. 1 Dealers' Wrought.....	9.00 to 9.50
No. 1 Mill.....	7.50 to 8.00
No. 2 Mill.....	6.00 to 6.50
No. 1 Bushelling.....	8.50 to 9.00
No. 2 Bushelling.....	7.50 to 8.00
Iron Car Axle Turnings.....	9.00 to 9.50
Soft Steel Axle Turnings.....	8.00 to 8.50
Machine Shop Turnings.....	7.00 to 7.50
Wrought Drillings.....	6.00 to 6.50
Cast Borings.....	4.00 to 4.50
Mixed Borings and Turnings.....	4.50 to 5.00
No. 1 Bolders, cut.....	8.50 to 9.00
Boiler and Ship Scrap.....	8.00 to 8.50
No. 1 Cast.....	12.50 to 13.00
No. 2 Cast.....	8.50 to 9.00
Railroad Malleable Cast.....	12.00 to 12.50
Agricultural Malleable Cast.....	10.00 to 10.50

**Metals.**—Copper has been very steady for a long time. Lake is still quoted at 17c. and Casting brands 16 1/4c. The demand for Pig Lead is confined to the purchase of moderate quantities for immediate use. No large contracts are being placed at present. Manufacturers continue to quote 4.32 1/2c. for Desilverized and 4.42 1/2c. for Corroding in 50-ton lots.

Christopher Murphy & Co. have opened an office in room 1012 Marquette Building, Chicago, as manufacturers' agents. Mr. Murphy was for many years connected with Joseph T. Ryerson & Son, selling Plates and general Boiler Makers' Supplies.

At Pittsburgh the Standard Gauge Steel Company of Beaver Falls, Pa., have entered suit against Singer, Nimick & Co., Incorporated, alleging an infringement of a patent for dies and die holders for drawing steel rods.

## Philadelphia.

Office of *The Iron Age*, Forrest Building, 1  
PHILADELPHIA, PA., October 23, 1900.

The market during the past few days has not shown any material change from last week, although the air is full of enthusiasm based on the apparent certainty of McKinley's election. The volume of business is fairly satisfactory, but no change of any account can be noted either in price or demand. There is to be a great deal of business placed next month, in fact the whole world is said to be waiting to distribute orders; but until the election is assured there is a general disposition to be noncommittal. It is curious that buyers do not show their faith by their works, and although most people believe that business would be seriously affected by the election of Bryan, yet it is not clear why there should be any great forward movement, simply because the administration of the past four years is to be continued for another term. Unquestionably business conditions are good, and will most likely be still better next year, but it is hardly to be expected that they will spring into new life like Jonah's gourd. A great deal of preliminary work is to be done, and although the large interests appear to be working together with a view of establishing a higher range of values, it is not yet clear how it is to be accomplished. It is an encouraging feature, however, to find that unanimity of action among the large concerns is toward protective and defensive operations, rather than toward antagonistic measures.

**Pig Iron.**—The market is steady, with some indications of increasing firmness. There is less heard about secret cuts, and it is believed that bottom figures have been reached, and that with anything like active buying prices might harden a little. The demand is not heavy, but a few lots of 200 to 500 tons each have been taken, and inquiries are on the market for 1000 to 2500 ton lots, but action on these may be deferred until after election, as there is a disposition to be very conservative. Makers of Iron are not crowding the market much, as they appear to think that their chances next month will be equally as good, if not better than they would be today, in case they should attempt to force sales. Consumption is on a fairly liberal scale, but in some lines prospects are not bright enough to encourage buying in advance of requirements. On the whole, however, the market is developing a stronger tone, but is not likely to show any material change until after the election. The range of prices is about as follows for city or nearby points: No. 1 X Foundry, \$16 to \$17; No. 2 X Foundry, \$15 to \$15.75; No. 2 Plain, \$14.25 to \$14.75; Standard Gray Forge, \$13.50 to \$14; Ordinary Gray Forge, \$12.50 to \$13; Basic, \$13.75 to \$14; Low Phosphorus, nominal, \$22.50 to \$23.

**Billets.**—There is a firmer feeling in Steel, but it cannot be said that buyers are paying more money. Makers are quoting \$21 for Bessemer and \$21 to \$22 for Open Hearth, but at present buyers are entirely unresponsive. It is believed, however, that better prices will rule in the near future.

**Plates.**—There has been a heavy week's business, mainly for the shipyards, which amounts to considerably more than 5000 tons, with more to be closed in the immediate future. Bridge builders have also been heavy buyers, so that the mills are now in a very strong position. Prices are unchanged, but the way things are moving it is probable that sellers will soon be quoting higher figures. To-day's prices are about as follows for city or nearby deliveries:  $\frac{1}{4}$ -inch and thicker, 1.25c. to 1.30c.; Universals, 1.30c. to 1.35c.; Shell, 1.35c. to 1.40c.; Flange, 1.50c. to 1.55c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

**Structural Material.**—There is nothing unusual to report. The run of small and medium sized orders is very good, and mills in this branch of business have not only a nice lot of work on hand, but have very satisfactory prospects ahead of them. Prices are as last quoted, viz.: Angles, 3 inches and upward, 1.65c. to 1.75c.; less than 3 inches, 1.30c. to 1.40c.; Beams and Channels, 15-inch and upward, 1.65c. to 1.75c.

**Bars.**—There is a good demand, but it is freely met at last week's prices, and with so many mills in active operation there appears to be no imminent danger of scarcity. The demand is of an exceedingly well distributed character, and includes some inquiries for export, although the keen edge of the appetite from that quarter appears to have been fairly well satisfied. Prices may be considered as about 1.25c. to 1.30c., delivered, for Refined Iron, and about 1.20c. to 1.25c. for Steel.

**Sheets.**—The demand for Nos. 18 to 28 is excellent, and mills are very much crowded on these descriptions. The lower numbers are comparatively dull, but prices are firm, as follows, for best Sheets (common Sheets two-

tenths less): No. 10, 2.25c.; No. 14, 2.35c.; No. 16, 2.50c.; Nos. 18-20, 3c.; Nos. 21-24, 3.10c.; Nos. 26, 27, 3.20c.; No. 28, 3.30c.

**Old Material.**—There is more demand and prices appear to be working toward a higher level. Sales have been made as follows: Choice Railroad Scrap at \$16.50, Steel Turnings at \$11.20, and \$17 bid for Gun Carriage Scrap, and \$14.50 for Steel Rails. Bids and offers are about as follows for deliveries in buyers' yards: Choice Railroad Scrap, \$16 to \$16.50; No. 1 Yard Scrap, \$13 to \$14; No. 2 Light Scrap, \$10.75 to \$11.50; Machinery Cast, \$13.50 to \$14.50; Heavy Steel Scrap, \$13.50 to \$14; Old Iron Rails, \$16.50 to \$17; Old Steel Rails, \$14 to \$15; Wrought Turnings, \$8.50 to \$9; Cast Borings, \$6.75 to \$7; Old Car Wheels, \$16.50 to \$17; Iron Axles, \$18 to \$19; Steel Axles, \$17 to \$18.

Justice Cox, Jr., & Co., Limited, 552-554 Bullitt Building, have been appointed agents for the sale of the Colonial Iron Company's Foundry and Forge Pig Iron in Philadelphia.

## Cleveland.

CLEVELAND, OHIO, October 23, 1900.

**Iron Ore.**—The uncertainty that has attached itself to the movement of Iron Ore, both in the recent past and in the prospects for the immediate future, has been removed in the last two or three days. The question now is a simple one. Almost all of the wild Ore has been brought down the lakes, with not more than a cargo a week being moved by wild tonnage. There have been no new sales lately, and as the contracts from the head of the lakes will cease November 1 the movement of Ore will stop at the same time. The vessels that have engaged in that trade will go to their docks for the winter, preferring to lay up rather than all engage in the grain trade and by overstocking the market with tonnage force the freights down. From Lake Michigan there will be a little Ore moving all the remainder of the season of navigation. This trade will also begin to ease off with November 1. Many of the contracts that cover Escanaba Ore expire at that time, but many of them run until November 15, while others are made to cover the operation of the boats until the end of the season of navigation. It has been expected that more Ore would be sold this fall for immediate movement, but the producers and the furnaces are so far apart on the price that nothing will be done until contracts are made for next season. This decision will leave only that amount of Ore to be moved which the vessel owners have contracted to carry.

**Pig Iron.**—During the past week or ten days the demand for Foundry Irons has increased largely. The inquiries have resulted in sales beyond the expectations of the furnacemen and the business has been heavier than it has been in six months prior. The quantities are not large, ranging from 50 to 1000 and 1500 tons, but the sales have been numerous. The furnacemen have been buying to cover only their immediate needs, waiting for the prices to come down. They are seemingly convinced that rock bottom has been reached, at least as long as Coke and Ore remain where they are, and they are covering for three and four months ahead. Sales have been made this week for deliveries as far ahead as April 1, 1901, while any number of orders have been placed for delivery in January and February. Nos. 1 and 2 Foundry are quoted at \$14 and \$13.50, respectively, which furnacemen assert is below the cost of production. There have not been sales enough of Bessemer to make a market. Bessemer furnacemen, who were in the association, are asserting with emphasis that they will not sell as long as prices are where they are. To further stimulate business and advance prices those Bessemer furnaces which have been in blast will blow out this week. So few Bessemer furnaces have been in blast that the production during the month of September amounted to 39,000 tons only in the Mahoning Valley.

**Finished Material.**—There is quite a good sized order of shipbuilding work that is pending, and if the election goes right it will be placed. The order amounts to 11,000 or 12,000 tons. The Eastern mills are filled up with Plate orders, which condition also prevails in this territory. Seeing the conditions of the mills, the millmen have advanced their quotations to 1.15c. as a minimum. No sales have been made on that basis. Some of the smaller concerns are still quoting 1.10c. on certain grades of Plates, with 1.05c. a possibility if a desirable order should present itself. The capacity of the various mills on Light Plates has been entirely sold up for two months. Bars are in good demand at 1.15c. to 1.20c., with some of the larger mills sold up for two months ahead, making the article rather scarce. In this respect conditions have not changed from a week ago. The de-



mand for Beams and Channels is very slack. Two or three concerns in Cleveland are buying, but they represent about the entire market. On the whole the trade is very light. No attempt has been made this week to break the association prices.

**Old Iron.**—It is still a waiting market that presents itself to the dealers in Scrap. There are a few sales of carload lots now and then, but these are decidedly limited as to number. The dealers are still buying, in hopes of a good business soon, but their operations are not on a very large scale. Old Rails are selling at \$17, while Stove Cast is bringing \$13.

Harry Bialosky, broker in Old Material and Second-Hand Machinery, has moved into his new quarters in the New England Building.

### Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, }  
CINCINNATI, October 24, 1900. }

There was a very decided break in the market for Southern Iron last week. Business was much more active, and a very fair tonnage was disposed of. There was a strong tip early in the week that something would be heard to drop if Iron could not be moved at the rates of last week, consequently salesmen went after trade with what might be termed standard quotations in one hand and a good sharp knife handy in the other, and they used the knife, too, or else all reports are sadly garbled. At \$10 for No. 2 Foundry, Birmingham, there was a strong protest last week, but now \$9.50 is openly made, and it is reported on good authority that at a contest in a lake city several thousand tons were placed on the basis of \$9.25, Birmingham, for No. 2 Foundry and Soft Irons. In another instance 1000 tons of No. 4 Foundry went at \$8.25, November and December delivery. The first mentioned contract was for January to June delivery. It is needless to say that there was no expectation of any such sweeping cut as this, and at this writing the trade is all at sea as to what to look for next. Will the cut be followed by still lower figures or will there be a rally? is a question no one feels like answering off hand. One thing is certain, that the feeling is anything but strong. A rush of buyers to cover on present quotations is rather expected, however. Freight rate from Birmingham is \$2.75 to this point; from the Hanging Rock district, \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$13.25 to \$14.00
Southern Coke, No. 2.....	12.25 to 13.00
Southern Coke, No. 3.....	11.75 to 12.25
Southern Coke, No. 4.....	11.25 to 11.75
Southern Coke, No. 1 Soft.....	13.25 to 14.00
Southern Coke, No. 2 Soft.....	12.25 to 13.00
Southern Coke, Gray Forge.....	11.25 to 11.75
Southern Coke, Mottled.....	11.25 to 11.75
Ohio Silvery, No. 1.....	16.50 to 17.00
Ohio Silvery, No. 2.....	15.50 to 16.00
Lake Superior Coke, No. 1.....	15.00 to 15.50
Lake Superior Coke, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 3.....	13.00 to 13.50
<i>Car Wheel and Malleable Irons.</i>	
Standard Southern Car Wheel, chilling grades.....	\$20.75 to \$21.25
Standard Southern Car Wheel, No. 2.....	19.75 to 20.25
Lake Superior Car Wheel and Malleable.....	19.00 to 20.00

**Plates and Bars.**—The market is rather unsteady and lower by about \$1 than it was last week. We quote f.o.b. Cincinnati: Iron Bars, in carload lots, 1.45c., with half extras; in small lots, 1.70c., with full extras; Bar Steel, in carload lots, 1.35c., with half extras; in small lots, 1.70c., with full extras. Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 1.70c., in small lots, 2.20c.; Sheets, No. 10, 2.20c.; No. 27, Steel, 2.95c.; Plates, 1.65c. to 2c.

**Old Material.**—The market is quiet and steady on an unchanged basis. Dealers' buying prices per gross ton, f.o.b. Cincinnati, are about as follows: No. 1 Wrought Railroad Scrap, \$11 to \$12; Cast Railroad and Machine Scrap, \$10 to \$11; Iron Axles, \$14 to \$15; Iron Rails, \$12 to \$13; Car Wheels, \$14 to \$15.

### St. Louis. (By Telegraph.)

Office of The Iron Age, 1905 Chemical Building, }  
St. Louis, October 24, 1900. }

**Pig Iron.**—Inquiry has been rather more limited than during the preceding week, and sales have been correspondingly lighter. Quotations shown below are under those named last week except on No. 3 Foundry. Some Southern No. 2 was sold a few days ago at concessions even on the minimum price of to-day. An inquiry is afloat for several thousand tons Southern Iron, and it is reasonably sure that it will be closed for at a price which will have its effect on the furnaces which are to-day holding out against the hammering of buyers or earnestness of selling agents. Whether the Iron in question is furnace or speculative stock is not clearly

known, but it is very evident that some one is out for business. There is not much agreement to-day among the trade as to what is the quotable price for different grades. We quote, f.o.b. cars, St. Louis:

Southern, No. 1 Foundry.....	\$14.25 to \$14.75
Southern, No. 2 Foundry.....	13.25 to 13.75
Southern, No. 3 Foundry.....	12.75 to 13.25
No. 1 Soft.....	14.50 to 15.00
No. 2 Soft.....	13.50 to 14.00
Gray Forge.....	11.75 to 12.25

**Bars.**—There seems to be a very good movement of both Iron and Steel Bars. The character of business remains about the same, material which is bought now being for nearby use. The trade is of the opinion that prices are very favorable, and while practically no uncertainty is felt as to what results the election will have on business there is no future buying of importance. Mill prices for heavy tonnage are 1.30c. to 1.40c. for Steel; Iron, 1.40c. to 1.45c., half extras. Jobbers quote carloads from mill at 1.65c., full extras, for Steel; smaller lots of Steel and Iron range from 1.75c. to 1.90c., full extras.

**Rails and Track Supplies.**—There is said to be no holding back so far as specifications for Track Supplies are concerned. The movement is said to be quite good. We quote Splice Bars, 1.35c. to 1.75c.; Bolts, with Square Nuts, 2c. to 2.10c.; with Hexagon Nuts, 2.10c. to 2.20c.; Spikes, 1.70c. to 1.80c.

**Pig Lead.**—There is a fair inquiry only. Soft Missouri is quotable at 4.22½c. to 4.25c., at which figures several hundred tons were sold lately. Chemical is quoted at 4.27½c., and Desilverized at 4.32½c. Lead Ore has been stable at \$46 per ton.

**Spelter.**—There is a moderate demand, and orders for future delivery have been taken at 4c. to 4.02½c. Owing to recent export engagements first hands are offering very little Spelter, as most of the production is tied up until the middle of November. Zinc Ore maintained a top value of \$28.50 per ton.

### Birmingham.

BIRMINGHAM, ALA., October 22, 1900.

Last week's letter announced at least a comfortable condition of Iron, with the outlook good for a steady market. But the weathercock of prognostications has turned tall and "things are not what they seemed." As a rule the prices quoted in last letter held good for the first half of the week and what business was done was on their basis, some fluctuations occurring. Some No. 1 Foundry went in at \$11.50, which was a cut of 50c. per ton. No. 2 Foundry sold at \$10.50 to \$11, with an effort to steady prices. No. 3 Foundry went to a limited extent at \$10.50 and Gray Forge fluctuated from \$9.25 up to \$10. As fair a trade was being done as, under the circumstances, could be expected, and a disposition was manifested to nurse it.

Suddenly the rumor was out that a leading interest had dropped the price of No. 2 Foundry to \$10. No one could or would give satisfactory authority for the assertion, and the interest credited with the drop in price would not throw any light on it. Later on your correspondent struck a lead that banished all doubt upon the subject. The market is therefore quoted at \$10 for No. 2 Foundry. The other grades cannot be quoted with any accuracy, as the differences will have to be adjusted to the changed order of affairs. But one can't miss it much if he guesses Gray Forge at \$9 and No. 3 Foundry at \$9.50. The Pipe companies have been buying, but, as stated in previous letters, to a very limited extent. It is estimated by a source that is favored generally by pretty correct information that their average supply on hand is equal to only one month's requirements. The writer has known that when purchases have been made requests for prompt shipments have invariably followed. The export trade is in a state of innocuous desuetude. One shipper stated if he could get cars he could do business. The shipments from the lakes of Pig Iron and Iron product to European countries without breaking bulk excites here a good deal of interest. The fact is recognized that to "keep in the swim" in the export trade we must be so situated that we can favorably compete with rival interests, both in rate of freight and certainty and promptness of delivery. This means a revolution in the present system of ocean transportation. Competition will keep rates to at least a moderate cost. But regularity of sailing and tonnage room must accompany a reasonable freight tariff.

The recent action of the railroad systems terminating on the Virginia coast, in combining together to foster this trade, will ease up the export situation to a limited extent by adding (practically) new sources of outlet for Iron and Iron product. It is a business axiom that to create a need for business facilities is, in time, to secure them. The strike at the Steel mill still continues. It

looks as if it will not end in a day. So far both sides are firm in their positions. The Tennessee Company operate the Bessemer Rolling Mills also. According to a clause in the articles of government of the Amalgamated Association of Steel and Iron Workers they can call a sympathetic strike at the rolling mill at Bessemer, because it is controlled by the same management that controls the Steel mill. This has been done and several hundred workmen have walked out, forcing the suspension of the works. And this, too, when there is no discontent with wages and no complaint of wrongs to right. But a little over a month ago these men signed the scale and obligated themselves to work under it for a year. The difficulty at the Steel mill did not affect individually a single man at the rolling mills. Yet they shut up shop and tie up business to force a recognition of and a compliance with the assumed rights of labor unions. It appears at times as if the employers of labor had no rights that it was incumbent on labor to respect. Of course the skilled labor necessary to run the Steel mill could not be obtained here, and the mill is running on one wheel only. But two furnaces are now in commission. If necessary they will run only one furnace and the various departments will be kept going as long as possible. The necessary skilled labor is being sought in other districts, and some of it has been secured and is now en route to Ensley. Of course on its arrival efforts will be made to demoralize it, and the result no one can yet tell. But of one thing there can be no doubt, and that is the friendly feeling that has heretofore existed between laborer and employer will be strained. Had there been a principle involved in the demands of the strikers they would have had the united sympathy and support of all classes of the community. If the unreasonable and unjust demands were granted it would only be a confession that the employer has only such rights as the employee chose to recognize. When that prevails anarchy will result and the fabric of our Government will tumble down upon us and a common destruction engulf capital and labor, employer and employee, in our common ruin.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, 1  
PITTSBURGH, October 24, 1900. (

(By Telegraph.)

**Pig Iron.**—As noted last week, the Bessemer Iron market seems to be slightly stronger and sales of small lots are reported as high as \$13.50. No large lots are being sold, but it is probable that \$13 to \$13.25 could be done without trouble on good tonnage. There have been sales of Malleable Bessemer Iron on the basis of about \$13, delivered Pittsburgh. Forge Iron is quiet and weak in price and sold down to \$12.50. Foundry Iron is in fair demand and some low prices have been made on No. 2. We quote Standard Bessemer Iron at \$13.25 to \$13.50 for small lots and \$13 in round lots. Forge Iron is \$12.50 to \$12.75, and No. 2 Foundry from \$13.75 to \$14, in small lots, all f.o.b. Pittsburgh. It is probable that on round lots No. 2 Foundry Iron could be bought at \$13.50. We note sales of Bessemer Iron of possibly 4000 tons at \$13.25, Pittsburgh, also a sale of 500 tons of No. 2 Foundry Iron at \$13.50, Pittsburgh.

**Billets.**—The Billet market is pretty flat and there is very little inquiry. The proposed movement to advance the price of Billets has collapsed. We quote Bessemer Billets at \$17, Pittsburgh, and it is possible on any specification this could be shaded. We quote Basic Open Hearth Billets at \$17.50, Pittsburgh, and up to \$19, depending on carbons.

**Sheet Bars.**—We quote Sheet Bars, long lengths, at \$20, delivered buyer's mill, Pittsburgh.

**Muck Bar.**—We quote standard grades of Muck Bar at \$24.50 to \$24.75, delivered Pittsburgh.

(By Mail.)

With a Presidential election only two weeks off, the present condition of the Iron and Steel market can be referred to as very satisfactory, the volume of tonnage being large and prices firm, with a decided upward tendency. Reports received from some of the largest mills indicate that heavy orders for material of nearly all kinds are ready to be placed, and will be just as soon as the election is over, providing the present administration is continued. The result of the election is being largely discounted, it is true, but there are many buyers and consumers who will wait until it is definitely decided before placing their contracts. It is the general impres-

sion that should McKinley be re-elected there will be an advance in prices. The present strength of the market and the heavy buying movement, which is increasing right along, is evidence of this. The Pig Iron market seems to be improving, and prices are firmer. Reports are that some mills are quoting from \$1.50 to \$2 a ton higher on Steel, but on the other hand, we are advised that other makers are quoting practically the same prices that have ruled for the past several months. There is an active demand for nearly all kinds of Finished Material, and in Steel Bars and certain sizes of Merchant Pipe prompt deliveries are difficult to get. The whole market can be referred to as in a very satisfactory condition, in view of the uncertainty which always prevails prior to a Presidential election. An interesting feature of the market at this time is that additional contracts for Steel Rails for foreign shipment have been placed.

**Ferromanganese.**—There is practically nothing doing, and we continue to quote \$75 for domestic, delivered.

**Structural Material.**—We are advised that quite a number of building projects, involving large tonnage in Structural Material, are held up until after the election. It is intimated that should McKinley be re-elected these contracts will be placed at once, insuring thousands of tons of material to the mills. No large jobs have recently been given out, but there is an active demand for small lots. Foreign trade in Beams and Channels and other shapes is steadily increasing, and some large work is pending. The leading bridge interest is said to have several foreign contracts about closed up. We quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 to 6 inches, inclusive, 1.40c.; over 6 inches, 1.50c.; under 3 inches, 1.25c.; Zees, 1.50c.; Tees, 1.55c.; Bars, 1.10c. to 1.15c.; Universal and Sheared Plates, 1.10c. to 1.15c., all f.o.b. Pittsburgh.

**Plates.**—Prices on Plates are much firmer. Several of the leading mills advise us that they are holding Tank quality at 1.15c. minimum. A good deal of tonnage has recently been placed, and some of the largest producers of Plates are very comfortably fixed with orders for the next couple of months. There is a good deal of export business in Plates being done. As noted last week, there is an active demand for the higher grades of Fire Box Steel. We quote Tank, ¼-inch and heavier, at 1.10c. to 1.15c.; Shell, 1.20c. to 1.25c.; Flange, 1.30c. to 1.35c.; Fire Box, 1.50c. for ordinary grades up to 3c. for special quality. It should be noted that some mills are holding Tank, ¼-inch and heavier, at 1.15c., minimum.

**Steel Rails.**—The Carnegie Steel Company are reported to have booked an order last week for 6000 tons of Steel Rails for shipment to New Zealand. Other foreign business is pending. We quote Steam Rails, Standard Sections, at \$26 at mill. The Lake Shore & Michigan Southern are reported to have placed an order for 50,000 tons of Rails.

**Bars.**—There is a scarcity of Steel Bars for prompt shipment, and the market is firm, with a decided upward tendency in prices. Specifications on contracts placed some time since are coming in very freely, while there is also a good deal of new tonnage being placed. Car builders have been liberal buyers in the past week or two. We quote Steel Bars at 1.10c., minimum, and are advised that some sellers are refusing to shade 1.15c. The starting up of so many mills by the Republic Iron & Steel Company has not disturbed the Bar Iron market, as anticipated, but on the contrary, that concern are getting sufficient orders to keep their numerous plants running full. Prices on Iron Bars are firm, and we quote at 1.25c., at mill. Slightly lower prices are being made on high grade Iron Bars, and we quote 1.50c. to 1.65c., at mill.

**Merchant Steel.**—A fair amount of new business is being placed, but buyers are evidently holding back considerable tonnage until after the result of the election is known. Prices are firm, and we quote Tire Steel at 1.25c.; Toe Calk, 1.50c. in large lots, and 1.60c. in small lots; Open Hearth Machinery, 2c. to 2.10c.; Open Hearth Spring, 2c. to 2.10c.; Plow Slabs, 1.65c., base; Open Hearth, 2c., base; Hammered Lay Steel, 3c.; Rolled Lay, 2.50c.; Cold Rolled Shafting, 60 and 10 per cent. off in carloads; Tool Steel, 7c. and upward, depending on the quality. On Tool Steel freight is allowed. Terms are 60 days, 2 per cent. for cash in 10 days.

**Sheets.**—There is a good demand for Sheets in carload lots and less, and it is probable that after the election some large contracts will be placed by leading consumers. Several of the smaller mills report that they have entered some contracts recently for shipment as far ahead as February. The market is firm, and we quote No. 27 Black Sheets, box annealed, one pass, at 2.80c. to 2.85c.; No. 28, 2.90c. to 2.95c. We quote Galvanized Sheets in carload lots at 75 per cent. off, with 15c. freight. It is probable that for good orders our prices on Galvanized could be shaded.



**Skelp.**—There is an excellent demand and Skelp mills are well filled up with tonnage, and firm in their ideas as to prices. Some mills are quoting considerably higher than they were a week ago. We quote Grooved Iron Skelp at 1.40c. to 1.45c., and Sheared, 1.50c. to 1.60c.; Steel Skelp, Grooved and Sheared, is about 1.30c. to 1.35c., delivered.

**Pipes and Tubes.**—There is a very active demand for Pipe and Oil Country goods. For certain sizes of Merchant Pipe prompt deliveries are hard to get. A good deal of foreign business is being placed, and more Pipe mills are in operation at the present time than for several months. The leading interest reports a heavy tonnage being placed. Prices are firm, and to consumers in carload lots we quote:

Merchant Pipe.		
	Black. Per cent.	Galvd. Per cent.
1/2 to 1 1/2 inch and 11 to 12 inch.....	61	48
3/4 to 10 inch.....	68 1/2	56
Casing, Random Lengths.		
	S. & S.	I. J.
2 to 3 inch.....	58	53 1/2
3 1/4 to 4 inch.....	63	59
4 1/4 to 12 1/2 inch.....	65	61 1/2
Casing, Cut Lengths.		
	S. & S.	I. J.
2 to 3 inch.....	53 1/2	49
3 1/4 to 4 inch.....	59	55
4 1/4 to 12 1/2 inch.....	61 1/2	57 1/2
Boiler Tubes.		
	Up to 22 feet. Per cent.	22 feet and over. Per cent.
Steel.		
1 inch to 1 1/2 inch and 2 1/2 inch.....	49 1/2	44 1/2
1 3/4 to 2 1/4 inch.....	45	39 1/2
2 1/2 to 13 inch.....	57	52 1/2
Iron.		
1 inch to 1 1/2 inch and 2 1/2 inch.....	49 1/2	44 1/2
1 3/4 to 2 1/4 inch.....	45	39 1/2
2 1/2 to 13 inch.....	57	52 1/2

Prices to jobbers are about 5 per cent. less than the above.

**Scrap.**—There is some improvement in demand for Scrap and prices on certain kinds are stronger. It is believed that the Scrap trade will show considerable improvement after the election, as the mills are holding off buying until that event has taken place. Prices are practically unchanged, and we quote: No. 1 Railroad Wrought Scrap, \$11.50, net ton; Old Iron Rails continue scarce, and we quote at \$16.50, gross ton; Old Steel Rails are about \$12; Tank and Pipe Scrap, Sheared, \$7.50; Turnings, \$5; Cast Iron Borings, \$5; Soft Busheling Scrap, \$11; Old Horseshoes, \$10 to \$10.50, and Low Phosphorus Melting Stock, \$15 to \$15.50, all in gross tons, except Horseshoes, which are net ton.

**Connellsville Coke.**—Last week out of 20,762 ovens in the Connellsville region, 14,220 were active and 6542 idle, the output having been 146,131 tons, a decrease of more than 12,000 tons over the previous week. There is little or no demand for Furnace Coke, and we quote strictly Connellsville at \$2, but note that small operators are making lower prices; 72-hour Connellsville Foundry Coke is held at \$2.25 to \$2.50, with lower prices being made on outside Coke.

## The British Iron Market.

**Summary.**—This has been another dull week. There has been little or no improvement in any branch of the Iron and Steel industries of the country. The Pig Iron markets have been weak, and makers' prices, in some cases, show a reduction, while in the finished branches competition grows keener and quotations are not so firmly maintained. The engineering trades are not overburdened with new work, but the shipyards are fairly busy. The American market is quiet, while on the Continent the boom appears to be moribund.

**Pig Iron.**—Pig Iron has been in slow sale during the past week and the business done was mainly for immediate requirements, operators being disinclined to enter into engagements for the future with prices visibly weakening. In the Cleveland district some further reduction has been made in the price of all qualities of Pig, No. 3 having come down to 68 shillings per ton, and less in second hands. This has not had the result of stimulating business, however, nor has the rapid decline in stocks all over the country had that effect, probably because it is attributed mainly to reduced deliveries on export, if not on home account. The average net price of No. 3 during the third quarter of the year was 69 shillings 6.48 pence per ton, a rise of nearly 1 shilling on the previous quarter. The Glasgow warrant market has fluctuated a good deal. Scotch have been down to 65 shillings 6 1/2 pence, and now stand at 65 shillings 9 1/2 pence. The following is a statement of the public stocks in tons:

	Tons.	Decrease during 1900. Tons.
Connell's at Glasgow.....	84,410	153,000
Connell's at Middlesbrough.....	11,917	53,300
Railway Stores, Middlesbrough.....	5,070	8,948
Connell's at Middlesbrough, hematite.....	555	154,000
Hematite, West Coast.....	43,810	

**Manufactured Iron and Steel.**—In the finished branches of the Iron and Steel trades there has been very little animation during the past week. In South Staffordshire the mills and forges are engaged on the completion of old orders, most of which expire shortly; but they will then have a few weeks' work in hand. Marked Bars are still in demand at £11 10s., but Common Iron have been reduced £1 to £9 15s., which is now the regulation basis. Bars have been reduced 10 shillings by nearly all sellers in the North of England, making Common Iron £9 per ton, best £9 10s. and best best £10 10s. In Scotland, too, prices are weaker, although there is no official change. Merchant Bars are quoted: Ordinary Scotch brands, £8 5s.; selected Scotch, £8 10s., and Angle Iron, £8 5s., while Steel Angles are at £8, Ship Plates at £7 17s. 6d. to £8, and Boiler Plates at £8 12s. 6d. to £8 15s., all f.o.b. Glasgow.

**Engineering and Shipbuilding.**—Throughout the engineering trades a continued shrinkage as regards new orders coming forward represents the position generally. Apart from one or two branches, such as electrical engineering and the locomotive and railway rolling stock building trades, which maintain exceptional activity, reports from nearly all other sections show that comparatively few new orders of any importance are just now being placed. There is nothing new to report in regard to the shipbuilding industry. From the returns compiled from *Lloyd's Register of Shipping* it appears that, excluding war ships, there were 452 vessels of 1,204,008 tons gross under construction in the United Kingdom at the close of the quarter ended September 30 last. The figures for the corresponding period of the previous year show 558 vessels with 1,347,549 gross tonnage, a reduction of about 61,000 tons on the last quarter, or, as compared with the return for December, 1898, the highest on record, a reduction of 197,000 tons.

**Foreign.**—On the Continent the French mill and forge owners have been more disposed to allow concessions, and the fact that, as the result of this attitude, consumers are sending in a large number of inquiries proves that they are ready to do business under more reasonable terms. There is not much improvement in the position of the Finished Iron trade in Belgium, while Germany also seems to be entering upon a period of depression.

**Comparison of Prices.**—The annexed table shows the current prices compared with those of last week, and of the corresponding period last year:

	Oct. 11, 1900. s. d.	Oct. 4, 1900. s. d.	Oct. 12, 1899. s. d.
<b>Iron Ore—</b>			
Rubio, Middlesbrough.....	21 6	21 6	18 0
Rubio, Cardiff.....	30 6	30 6	16 9
Pottery Mine, North Staffordshire.....	30 6	30 6	17 6
Hematite, West Coast (at mines).....	19 6	19 6	16 6
<b>Pig Iron—</b>			
No. 3 Foundry, Middlesbrough.....	68 0	68 9	68 6
Warrants.....	67 9	.....	68 3
Scotch Warrants, Glasgow.....	65 9 1/2	66 11	69 6
Hematite Warrants, West Coast.....	75 3	76 6	74 3
Cold Blast (Foundry), South Staffordshire.....	130 0	130 0	117 6
Welsh Hematite, Cardiff.....	80 0	80 0	82 6
<b>Manufactured Iron and Steel—</b>			
Marked Bars, South Staffordshire.....	11 10 0	11 10 0	10 0 0
Common Bars.....	9 15 0	10 10 0	9 0 0
Steel Rails, Middlesbrough.....	7 2 6	7 2 6	6 15 0
Steel Rails, West Coast.....	7 5 0	7 5 0	6 10 0
Steel Rails, Cardiff.....	7 0 0	7 0 0	6 10 0
Steel Angles (eng.), Middlesbrough.....	8 7 6	8 10 0	7 10 0
Steel Angles (eng.), Glasgow.....	8 0 0	8 0 0	7 7 6
Steel Plates (ship), Middlesbrough.....	8 0 0	8 0 0	7 15 0
Steel Plates (ship), Glasgow.....	8 0 0	8 0 0	8 0 0
<b>Tin Plates, Bessemer IC Cokes, South Wales.....</b>	s. d.	s. d.	s. d.
	14 0	14 0	15 6

—Iron and Coal Trades Review, October 12, 1900.

## New York.

Office of The Iron Age, 232-238 William street, }  
NEW YORK, October 24, 1900. }

**Pig Iron.**—At least one large interest has made liberal purchases during the week, the quantity involved being close to 10,000 tons. The export trade has been light lately, so far as new sales are concerned. Quotations are as follows at tidewater: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16.50 to \$18; No. 2 X, \$15 to \$16; No. 2 Plain, \$14 to \$15; Gray Forge, \$13.75 to \$15. Tennessee and Alabama brands, No. 1 Foundry, \$15.25 to \$15.50; No. 2 Foundry, \$14.25 to \$14.50; No. 1 Soft, \$15.25 to \$15.50; No. 2 Soft, \$14.25 to \$14.50; No. 3 Foundry, \$13.50 to \$14; No. 4 Foundry, \$13 to \$13.50; Gray Forge, \$13 to \$13.50.

**Cast Iron Pipe.**—The principal item of interest is that bids have been called for about 30,000 tons of Cast Iron Pipe for the Metropolitan district, 23,000 tons for Brooklyn and about 7000 tons for the Bronx. The bids are to be opened November 1. We continue to quote \$23 to \$23.50 for 8-inch, per gross ton, tidewater.

**Steel Rails.**—Eastern mills report sales during the week for the home market of about 10,000 tons in the aggregate. Quite a number of export sales are reported to have been made, including 10,000 tons for Turkey, 6000 tons for Holland, 3000 tons for Ireland and 3000 tons for an English road. No part of the South African business has yet been allotted. We quote \$26 for Standard Sections, \$25 and \$26 for Light Sections, and \$38 to \$38.50 for Girder Rails. We quote Spikes, 1.45c. to 1.50c.; Splice Bars, 1.25c. to 1.35c.; Square Track Bolts, 2.05c. to 2.15c., and Hexagon Bolts, 2.20c. to 2.25c.

**Finished Iron and Steel.**—Foreign business which has been pending for some time is not yet definitely closed. Among the more important domestic contracts recently placed is one for upward of 5000 tons for a structure to be erected at the river side. We quote as follows at tidewater: Beams, Channels and Zees, 1.65c. to 1.70c.; Angles, 1.30c. to 1.40c.; Tees, 1.65c. to 1.75c.; Bulb Angles and Deck Beams, 1.90c. to 2c.; Universal Mill Plates, 1.25c. to 1.30c. Sheared Steel Plates are 1.20c. to 1.30c. for Tank, 1.35c. to 1.40c. for Shell, 1.50c. to 1.70c. for Flange, 2.10c. to 2.30c. for Fire Box, 3.50c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.30c. to 1.35c.; Common Bars, 1.15c. to 1.35c.; Soft Steel Bars, 1.15c. to 1.30c., and Hoops, 1.90c. to 2.25c., base, on dock.

**Old Material.**—One of the Coal roads has disposed of 2000 to 2500 tons of Wrought and Cast Scrap to works along the line, at private terms, the dealers getting very little of the material. The market is dull, both for the home and the foreign markets.

## Metal Market.

Office of The Iron Age, 232-238 William street, {  
NEW YORK, October 24, 1900. }

**Pig Tin.**—Since our last writing spot Tin broke to 27.60c., reacted to 28.25c. and closed to-day with a heavy decline, and in a very weak position at 27.50c. to 27.70c. for spot and October. Much pressure is being brought to bear here in an endeavor to sell spot, but the demand is very limited. So far this month 1727 tons have arrived and 450 tons are due this week. In London the market first broke to £125 10s. for spot, reacted to £130 5s. and closed weak to-day at £127 for spot and £123 15s. for futures. It may be of interest to mention that since the high water mark in March when £152 was named in London, the article under heavy fluctuations receded to a lower level. The end of each flurry on the London 'Change saw the price a little lower, despite the strong efforts which were made. It would appear from this that the English manipulators were not meeting with entire success at present. The discount on futures in London has dwindled down to £3 5s., and were it not for the fact that the market is affected by the work of the manipulators, it is thought that under the existing supply and demand the futures would naturally command a premium over spot.

**Copper.**—The market here is extremely dull at unchanged prices. Electrolytic may be a little softer, as there is talk of sales for December delivery at 16½c. Lake Superior Ingot is still quoted 16¾c. to 16¾c., and the figure generally given out for Electrolytic is 16¾c. After showing slight advances the London market is again on the downward trend, with a very light business doing. The demand from the Continent is said to be very slight. The closing prices cabled from London to-day were £71 17s. 6d. for spot and £72 8s. 9d. for three months' futures. Best Selected closed at a decline of 5 shillings, with £78 5s.

**Pig Lead.**—There is no change in this market. The American Smelting & Refining Company are quoting 4.37½c., New York, for lots of 50 tons and more, and 4.32½c., f.o.b. St. Louis. London has declined to £17 7s. 6d., a drop of 5 shillings since last week. During the week under review very heavy shipments were made from here to England and Germany, amounting to over 4000 tons. Most of this, it is stated, was shipped by the A. S. R. Company.

**Spelter.**—Is dull at unchanged prices. Shipments from the West are quoted 4.10c. to 4.15c. London declined from £19 10s. to £18 17s. 6d. to-day.

**Antimony.**—Is unchanged. Hallett's is quoted 9¼c., and Cookson's 10¼c.

**Nickel.**—There is no change, the metal remaining as strong as ever, with only small lots offering. Prices of small lots are 55c. to 60c.

**Quicksilver.**—Is unchanged, prices quoted here being \$51 per flask of 76½ pounds for lots of 50 flasks or more. London cables £9 2s. 6d.

**Tin Plates.**—A fair business is reported from jobbers. The American Tin Plate Company are still quoting on a basis of \$4.19 per box of Standard 100-lb. Cokes, New York delivery, and \$4, f.o.b. mills.

## New Publications.

**GALVANIZING AND TINNING.** By W. T. Flanders. Published by David Williams Company, 232-238 William street, New York. Price, \$2. Size, 5½ x 8 inches; 93 pages; 40 illustrations.

This book is a practical treatise on coating articles with tin and zinc, with a special chapter on tinning gray iron castings. The author has made a specialty of the work of galvanizing and tinning small articles, and has been employed to erect plants in various parts of the country, and to instruct the owners so that in all instances they have been able to operate them successfully. The subject of galvanizing is treated in a thoroughly practical manner, beginning with the selection of the materials and apparatus for erecting a plant, and giving full instructions for heating it so that it is ready for the work. Then the proper method for treating the different metals and different articles so that there will be no difficulty in giving them a secure and also an attractive coating to protect them, is presented, enabling the work to be accomplished in a very short time by those who have never done it before. The tinning of articles is treated in the same practical manner, and the difficulty found by many who have attempted to tin malleable and gray iron castings is explained and methods for doing the work successfully are made very simple. After giving complete instruction for the erection of plants of large or small capacity and their equipment, the preparation of the work for the tin or zinc bath is so detailed as to omit nothing that might interfere with successful operation if the instructions are closely followed. Those who manufacture small articles of wrought, malleable or cast iron which they desire to coat to protect them from rust, and also desire to impart to them the bright and crystallized appearance that is so attractive, will find this book full of valuable information.

**POOR'S MANUAL OF RAILROADS.** Thirty-third annual number, 1900. Published by H. V. & H. W. Poor, 44 Broad street, New York.

Poor's Manual is so thoroughly and well known to every one who is even remotely interested in railroads that a detailed account of its contents seems superfluous. The introduction summarizes the principal statistics, and is followed by a highly interesting chapter entitled, "A Study on Railway Statistics," reviewing the history of railroad construction in this country and of their checkered financial development. The great body of the work is occupied by the detailed and complete statistical and financial data relative to each individual system and line, including those of Canada and Mexico. Similar information is collected in very handy form for the short surface railways, and for miscellaneous industrial corporations. A special department deals with State and municipal indebtedness, and there are tables giving the dividends of railroad and other corporations, a bond list of steam railroads, &c. A directory of railway officials closes the volume.

**ENGINEERING STUDIES.**—Part II. Roman Stone Arches. By Charles Evan Fowler. Published by the Engineering News Publishing Company, New York.

The pamphlet before us consists of a series of neat photogravures of Roman arches with brief descriptions. Among those dealt with are the bridge of Sant'Angelo over the Tiber, the Rimini Bridge, the bridge of Alcantara, the Gard Bridge at Nîmes, and some more modern structures.

**A Fake Report.**—PITTSBURGH, PA., October 24, 1900.—The report printed in the Pittsburgh papers to-day of a \$12,000,000 steel plant to be established at Welland, Ontario, by Pittsburgh capital, is untrue. John S. Scully, a specialist and banker of this city, who is mentioned as being connected with the reported enterprise, denies absolutely that he is in any way identified with it. Mr. Scully states that there is only one place in this country to make steel, and that is in the Pittsburgh district.



## QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING OCTOBER 24, 1900.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Sales.
\$29,000,000	Am. Car & Foundry, Common.....	16½-16½	16½-16½	16½-17	17 -17½	17½-17½	18 -18½	24,581
29,000,000	Am. Car & Foundry, Pref. (7 % Non-Cu.)	62 -62½	62½-63	62½-63	63½-64½	63½-64½	63½-64½	4,875
19,000,000	Am. Steel Hoop, Common.....	19½-20	20 -21	21½-24½	24½-25½	23½-24½	24 -25	35,475
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.).....	66½-67	67½-69	70 -71	72 -73	72 -73½	72½-73	7,295
50,000,000	Am. S. & W., Common.....	33 -34½	34½-35	34½-35½	36 -37½	35½-36½	35½-36½	121,625
40,000,000	Am. S. & W., Pref. (7 % Cu.).....	74½-75½	74½-75½	75 -75½	75½-76½	75½-76½	75½-76	12,488
28,000,000	Am. Tin Plate, Common, N. Y.....	32½-32½	32½-33	33 -34	34 -35	33½-34½	34½-35	13,535
18,325,000	Am. Tin Plate, Pref., N. Y. (7 % Cu.)	.....	82½-83½	.....	82½-83	82½-82½	82 -82½	1,570
7,500,000	Bethlehem Iron.....	.....	.....	.....	-56½	-56½	-57½	102
15,000,000	Bethlehem Steel, Par \$50, \$1 paid in...	15½-15½	-15½	-16	-16	15½-16	-15½	1,005
7,974,550	Cambria Iron, Phila.....	.....	.....	44½-44½	-44½	.....	-45	75
16,000,000	Cambria Steel**.....	15½-15½	15½-15½	15½-16½	16½-16½	16½-16½	16½-16½	7,270
11,000,000	Col. Fuel & Iron.....	35½-36	36½-37½	37½-38½	39 -40½	38½-39½	39½-40½	24,480
46,484,300	Federal Steel, Common.....	34½-36½	36½-37½	36½-39½	39 -40½	39 -40½	39 -40½	116,909
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)....	65 -66	66½-67½	67½-68½	68½-69½	67½-68½	68 -69½	19,070
32,000,000	National Steel, Common, N. Y.....	26½-27½	27½-27½	27½-30	29½-31	29½-30½	29½-31	24,595
27,000,000	Nat'l Steel, Pref., N. Y. (7 % Cu.).....	.....	84½-85	84½-85	85 -85½	85½-86	87 -87½	4,580
40,000,000	National Tube, Common, N. Y.....	49 -49½	49½-50½	50½-52	53½-55	54 -54½	54 -55½	45,219
40,000,000	Nat'l Tube, Pref., N. Y. (7 % Cu.).....	94½-94½	94½-94½	95 -95½	95 -97½	97½-98½	98½-98½	9,527
5,000,000	Penna., Common, Philadelphia.....	.....	.....	.....	-55	-55	.....	475
1,500,000	Penna., Pref., Philadelphia.....	85½-86	.....	-86	-87½	.....	86 -90	114
12,500,000	Pressed Steel, Common.....	39½-39½	39½-40½	40½-41	42½-48	44 -45	43½-45	13,425
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)....	77½-78	-78	-78½	80 -81½	81 -82½	-82	2,010
27,191,000	Republic Iron & Steel, Common.....	12½-12½	12½-12½	12½-12½	14 -15½	14½-15	14½-14½	19,354
20,306,900	Repub. Iron & Steel, Pref. (7 % Cu.)..	.....	-54	-54	55 -57	56½-57½	57 -57½	7,454
7,500,000	Sloss-Sheffield S. & I., Common.....	.....	.....	17½-18	-17½	.....	17½-18½	700
4,700,000	Sloss-Sheffield S. & I., Pref. (7 % Non-Cu.)	62½-63	63 -63½	.....	63½-64½	64 -65	-65	1,950
20,000,000	Tennessee Coal & Iron.....	56 -58½	57 -57½	57½-59	58 -61	58½-60	58½-59½	46,835
1,500,000	Warwick Iron & Steel (par \$10).....	- 7½	.....	.....	- 7½	- 8	- 8	827

\* Par \$50. \*\* \$9 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

**Bonded indebtedness:** Am. S. & W., \$130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6% debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$9,822,000 Illinois 5% \$7,417,000 E. J. E. R. R. 5%, \$1,000,000 Johnson 6%, \$5,734,000 D. & I. R. R. 5%, \$1,000,000 3d D. & I. R. R. 6%, \$10,000 land grant D. & I. R. R. 5%; National Steel, \$2,561,000 6%; National Tube, none; Tennessee C., I. & R. Co., \$8,307,000 6%, \$1,114,000 7%, \$1,000,000 7% cu. pref.; Pennsylvania Steel, \$1,000,000 5%, Steelton, Ist, 1917 \$2,000,000 5%; Sparrow's Point, Ist, 1922, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6% \$880,000, Col. Coal & Iron Con. Mort. 6% \$2,810,000, Col. Fuel & Iron Gen. Mort. 5% \$2,303,000. Also outstanding \$2,000,000 preferred stock - 4th accumulated dividends of \$640,000 to June 30, 1899. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6%, \$2,000,000, Sloss I. & S. general mortgage 4½% \$1,835,000.

## Iron and Industrial Stocks.

In nearly every department of the market there has been an almost continuous boom during the whole week under review, notable advances being scored in Steel Hoop, common and preferred; Tin Plate, common; Colorado Fuel, Federal Steel, National Tube, Pressed Steel, preferred, and Tennessee. The latter, it is reported, is now controlled by new interests entirely. For the first time in a long while the sales of Steel & Wire and of Federal Steel ran up above 100,000 shares in one week.

	Bid.	Asked.
American Bicycle Company, common.....	3½	5
American Bicycle Company, preferred.....	18	19½
American Bicycle Company bonds.....	62	70
E. W. Bliss, common.....	.....	137½
W. Bliss, preferred.....	125	.....
Cramp's Shipyard stock.....	68	72
Diamond State Steel.....	4	4½
Empire Iron & Steel, common.....	4	10
Empire Iron & Steel, preferred.....	34	38
International Silver, common.....	4½	4½
International Pump, common.....	22	23
International Pump, preferred.....	69½	70½
National Enam. & St., common.....	19	24
National Enam. & St., preferred.....	78	84
New Haven.....	3½	3½
Otis Elevator, common.....	27	27½
Otis Elevator, preferred.....	87	88½
Pratt & Whitney, common.....	3½	5
Pratt & Whitney, preferred.....	45	55
Tidewater Steel.....	8	8½
U. S. Cast Iron Pipe Company, common.....	4	4½
U. S. Cast Iron Pipe Company, preferred.....	30	32
U. S. Projectile.....	100	.....
Va. C. I. & C., stock.....	7	8
Va. C. I. & C., bonds.....	30	39
H. R. Worthington, preferred.....	.....	110

**American Car & Foundry Company.**—The American Car & Foundry Company will, as usual, send out a statement of the earnings with the dividend checks to be mailed November 1 to stockholders. This statement covers the earnings for the four months, May to August, and also shows the surplus earnings for the 18 months since the formation of the company, after deducting six dividends of 1¼ per cent. each on the preferred and two of ½ per cent. on the common stock. The figures are as follows: Earnings.—Balance, as per first annual report for period ending April 30, 1900, \$3,698,648; net earnings for four months ending August 31, 1900, \$2,002,743; total, \$5,701,391. Disposition of same.—Dividends on preferred capital stock: 1¼ per cent. on \$29,090,000 paid August 1, 1900, \$509,075; 1¼ per cent. on \$30,000,000 paid November 1, 1900, \$525,000; total preferred dividends, \$1,034,075; dividends on common capital stock, ½ per cent. on \$29,090,000 paid August 1, 1900, \$145,450; ½ per cent. on \$30,000,000 paid November 1, 1900, \$150,000; total common dividends, \$295,450; total dividends, \$1,329,525; balance, \$4,371,866.

The Tennessee Coal, Iron & Railroad Company report as follows for September:

	1900.	1899.	Changes.
Net earnings.....	\$140,981	\$217,783 Dec.	\$76,802
Fixed charges.....	54,777	46,563 Inc.	8,214
Surplus.....	\$86,204	\$171,220 Dec.	\$85,016
Charged off for depreciation.....	64,592	..... Inc.	64,592
Final surplus.....	\$21,612	\$171,220 Dec.	\$149,608
From January 1 to September 30:			
Net earnings.....	2,163,122	1,013,097 Inc.	1,150,025
Fixed charges.....	492,992	594,030 Dec.	101,038
Surplus.....	\$1,670,130	\$419,067 Inc.	\$1,251,063
Depreciation.....	64,592	..... Inc.	64,592
Final surplus.....	\$1,605,538	\$419,067 Inc.	\$1,186,471

The Sloss-Sheffield Steel & Iron Company report for the quarter ended August 31 actual net earnings of \$185,033, against estimated net earnings of \$172,375, an increase of \$12,658.

**Dividends.**—The Cambria Steel Company have declared a dividend of 50 cents per share, payable November 15.

The fourth installment of the 6 per cent. dividend on the common stock of the Pressed Steel Car Company for the year ended December 31, 1899—that is, 1½ per cent.,—will be paid on November 19, 1900, to common stockholders of record on October 23, 1900. Transfer books will close October 23, 1900, and reopen November 19, 1900.

The Ashton Valve Company of Boston, Mass., have declared a regular quarterly dividend of 1½ per cent., payable November 15, to stock of record November 1.

The Warwick Iron & Steel Company, Pottstown, Pa., have declared a dividend of 2 per cent., payable November 10.

Henry R. Worthington, Incorporated, has declared a dividend of 3½ per cent. on the preferred stock, payable November 1.

The International Steam Pump Company have declared the regular quarterly dividend of 1½ per cent. on their preferred stock, payable November 1.

The Cambria Steel Company have issued a call for an assessment of \$1.50 per share, payable December 1, as registered November 30.

The directors of the American Steel Casting Company have declared the regular annual dividend of 3 per cent. on the common stock, payable October 31.

Directors of the Alabama Consolidated Coal & Iron Company have declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable November 20.

The National Wire Corporation have declared a quarterly dividend of 1½ per cent., payable November 15.

## The Philadelphia Machinery Market.

Office of *The Iron Age*, Forrest Building, }  
PHILADELPHIA, PA., October 22, 1900. }

The machinery market in Philadelphia is in rather a stagnant condition, and has fallen off to some extent in volume, as compared with last month. Apathy seems to be almost general in all branches of the trade, and there are but few exceptions. Inquiries have not been as heavy, and the proportion of business taken is considerably less. A number of manufacturers, particularly in the line of pneumatic machinery, hoists, cranes and heavy machinery, are quite busy, but mostly on previous bookings; and some of the smaller manufacturers in certain lines of machine tools are exceptionally dull.

There has been more or less talk of cutting prices on some tools, and probably in some cases it has been done, but prices generally remain firm. Foreign trade has not been quite as active this month. Inquiry has fallen off slightly, but the outlook is encouraging as some good business is in the market. No actual improvement in the home trade will be looked for until after the November elections, the effect of which is now noticeable as the date of same becomes nearer. The effect of the anthracite coal miners' strike is no longer appreciable, the settlement of which will probably have been made before this goes in print. The lack of trade from the district and the advanced price of coal, of course, have exercised some detrimental phases to business generally.

The smaller engine, machine tool and general supply trade keeps quite active, considerable business is being done, but orders being received are only for limited quantities, suitable for immediate requirements. There seems to be no disposition to take up supplies in any quantity.

I. H. Johnson, Jr., & Co., manufacturers of lathes and special machinery, have considerable work on hand. They have been delayed to some extent on deliveries, owing to non-completion of their new erecting shop, which has been retarded on account of non-arrival of the machinery parts. Inquiries with them have been good, and a substantial number of orders have been taken. A number of lathes varying in weight are under way, some of which are as heavy as 150,000 pounds, and others weigh up to 240,000 pounds each. One lathe nearing completion is for Milwaukee delivery, and is 30 feet by 60 inch swing; another for the United States Ordnance Shops, Washington, D. C., is 30 feet by 66 inch swing.

With the Pennsylvania Machinery Company trade during the month has been exceptionally active. Orders for the smaller tools and machinery are good, and deliveries have been made of several engines, lathes and other tools. Among these may be noted one 40 horsepower boiler, three vertical engines for Pennsylvania delivery, one 8 x 8 vertical engine for Denver, Col.; one 10 foot by 40 inch lathe for Camden, N. J., and a larger lathe for Philadelphia delivery. The line of pneumatic tools has also been moving quite favorably.

Lodge & Shipley Machine Tool Company, Philadelphia branch, W. E. Shipley, manager, report good business during the month. Inquiries have been heavy and numerous orders have been booked. Business in Reeves' variable speed countershafts continues good, as it also does in the line of Cincinnati lathes. Several of these have been sold for nearby delivery.

The Otto Gas Engine Works are running all departments full time, they have a large amount of work on hand, and inquiries continue good, especially from city and nearby points. Some of the marine type engines for the United States torpedo boats have been tested, and are about ready for delivery. Extensive improvements are being made to the offices of the works. The whole interior is to be rearranged and remodeled.

The Geo. V. Cresson Company, manufacturers of power transmission and other machinery, are exceedingly busy in all departments. Among recent shipments may be noted a rock breaker and entire crushing outfit for the Inter-Colonial Copper Company. They have in course of construction extensive ore handling machinery for shipment to Ontario, Canada, and have booked orders for power transmission machinery for several Southern cotton mills and for a cement plant in Eastern Pennsylvania. They have within the past few days closed a contract for the entire installation of power transmitting machinery for the Grant Machine Tool Company, Franklin, Pa. Several improvements to the plant are being made; a large storage warehouse for patterns is now being erected and extensive additions are being made to some of their other buildings.

Business during the month with the American Pulley Company has fallen off slightly. A good number of orders are, however, on the books. Inquiries from abroad remain steady, but home inquiries have not been as active. They expect shortly to be ready for deliveries on the larger sized pulleys, the machinery for which is now in position, and requires only the finishing touches; they then look for greatly increased business in this line.

At the crane department of the Niles-Bement-Pond Company considerable activity is to be noted. The department is extremely busy; 46 cranes are in course of construction, several having recently been delivered to the New York Ship & Engine Building Company, Camden, N. J., and to other points. Their capacity at present is from two to three cranes per week. They have also in course of construction two pulleys for Dallas, Texas, delivery. These have 58-inch face, and weigh 80,000 pounds each, and will be driven by a 700 horsepower engine. The peripheral speed will be about 5600 feet. Some recent orders are three cranes for the Maryland Steel Company, Baltimore, Md., and one 70-foot span electric crane, 30-ton capacity, for the Phoenix Iron Company, Phoenixville, Pa. Work on their various improvements continues; the alteration to the boiler house has been completed and a 300 horse-power steel stack, 125 feet high, has been erected. A new pattern shop, 80 x 40 feet, is also being built. This will be of steel and galvanized iron, and will be practically fire proof. Plans are under way for the erection of an electric traveling crane, 70-foot span, to cover the storage yard, and to be used to facilitate the handling of raw material.

The Link-Belt Engineering Company report no appreciable falling off in inquiries or orders, though no specially large work has been taken during the current month. Quite a satisfactory number of smaller orders have been booked. Among work recently completed may be mentioned a coal handling outfit for the Midvale Steel Company, Philadelphia, consisting of coal conveyors for their new boiler house, and having a capacity of 50 tons per hour.

Continued activity and a good volume of business is the report of Alfred Box & Co., and orders and inquiries continue good. Among the orders in course of construction may be noted the crane equipment for the Seaboard Steel Castings Company, Chester, Pa.

The Pedrick & Ayer Company, manufacturers of air compressors, pneumatic hoists, stationary and pneumatic compression riveters, &c., continue busy in all branches of their business. Inquiries, both foreign and domestic, are heavy, and a substantial number of orders are being taken. Shipments have recently been made of air compressors, pneumatic riveters and appliances to Bilbao, Spain; Amsterdam, Holland, and San Francisco, Cal. A number of orders are on hand from the Middle and Far West, as well as in the East. All departments of the works are running on full time.

With the Philadelphia Pneumatic Tool Company, manufacturers of pneumatic tools, business continues active. Foreign and home inquiries are both good, and considerable trade, especially foreign, has been done during the current month. Shipments have been made to Copenhagen, Denmark, and to various points in Germany, where a consignment of 12 drills was shipped to one party. Among recent orders received by this company is one for a 225-foot duplex compressor and an outfit of five tools for Pennsylvania delivery. Negotiations are also under way for a single order of 16 pneumatic rammers.

The Barr Pumping Engine Company, manufacturers of a general line of pumps and pumping engines, have more business on their books than during last year's boom. Both inquiries and orders have been heavy and negotiations are under way for a number of large contracts. They have now under construction a complete pumping equipment for a sugar plant in Cuba, one pump alone having a capacity of 3,000,000 gallons per day (24 hours), and also a 6,000,000-gallon water works engine for the city of Haverhill, Mass. They are now taking up the matter of increasing the size of their plant. It is proposed to build a new foundry and to double the capacity of the present machine shops. This improvement, when completed, will give employment to about 200 additional men.

The Moore & White Company, manufacturers and designers of paper mill and special machinery, are making extensive additions to their present plant. They have purchased adjoining ground, 86 x 180 feet, and have just completed a brick addition to the foundry. The erection of a three-story steel and brick building, with 86 feet frontage, is now under way. The building is to be used as a machine and erecting shop, and will be installed with necessary machinery and electric traveling cranes. A new 150 horse-power boiler and engine have just been installed. On completion of these improvements the capacity of the plant will be more than



doubled. Inquiries have been plentiful and resulting orders heavy, and they have been taxed to their utmost to get work out. The works have been running double turn in order to keep up on deliveries.

The Baldwin Locomotive Works are extremely busy. Inquiries are very good, and the volume of business being taken is large. Foreign demand, however, has fallen off slightly during the past month. Among recent shipments may be noted several of the ten locomotives to Egypt for the Egyptian State Railroad, and a number on the order of 48 for the Chicago, Milwaukee & St. Paul Railroad and six for the Denver & Rio Grande Railroad. Some later orders closed by them include 32 engines for the Union Pacific Railway Company and 30 engines for the Chicago, Burlington & Quincy Railroad. The latter are to be used for heavy passenger and fast freight service on their Western division; the type is known as the Prairie, and the locomotives will weigh about 130 tons each. The Baldwin Locomotive Works have purchased property, 100 x 106 feet by 6 inches, on the north side of Pennsylvania avenue, between Fifteenth and Sixteenth streets, for \$60,000, which will be used for an extension of the plant. They are also building at Twenty-eight street and Pennsylvania avenue a brick building for the testing and shipping of locomotives before shipment. The installation of machinery in the new machine shop progresses as rapidly as possible.

W. W. Lindsay & Co., engineers and constructors, report a good volume of business. Inquiries are active and a good proportion of contracts are taken. Under recent contract we may mention four steel chimneys, 162 inches by 200 feet, for the United Railways & Electric Company, Baltimore, Md.; this will be the largest plant of steel chimneys in the world. They have also one chimney, 108 inches by 201 feet, for the new power plant of the Baldwin Locomotive Works, Philadelphia; one 69 inch by 100 foot for the Girard Point Elevator of the Pennsylvania Railroad Company, at Greenwich Piers, Philadelphia; one 70 inch by 287 foot 4 inches for the North American Building, Philadelphia; two 50 inch by 80 foot for the new steel plant of the Seaboard Steel Castings Company, Chester, Pa.

## The Cincinnati Machinery Market.

Office of *The Iron Age*, Pickering Building, {  
CINCINNATI, OHIO, October 20, 1900. }

Generally speaking, the present condition of the iron market in all its ramifications is a waiting one, so far at least as the home field is concerned. August was a very dull season, especially in the machine tool shops. September was on the whole better in a quiet way. October also has shown a healthy increase, with inquiry of such volume as to lead to the general expectation of a fairly good trade after the issues of the campaign have been decided. There is a feeling that trade will be better no matter which party wins at the polls, but it is very evident that the iron people do not regard a change of administration as likely to contribute very extensively to the welfare of Cincinnati shops. A number of firms report conditional orders to be filled as soon as it is evident that there is to be no administrative change.

For some cause not thoroughly agreed upon trade is very quiet with all parts of Europe. England alone is still taking machines in any quantity worth mentioning, and even there trade is far from a satisfactory volume. Companies who are cultivating the Spanish speaking Americas alone report that there is no blot on the season's business. The number of machine tools going to the Spanish Americas is, excepting Mexico, small; it is other lines of manufacture which are enjoying the activity. The Southern United States is being looked after pretty closely by all tool makers, and the evidences of prosperity away down in Dixie are numerous and gratifying. The feature of Southern trade in times past has been the desire for second-hand or the cheaper grades of machines; but now this is changing in a marked degree. Southerners are buying first-class shop equipment and showing less inclination to invest in things of a temporary character. Nashville, Knoxville, Chattanooga, Atlanta, and to some lesser degree Birmingham, have all been and are still actively figuring in the Cincinnati machine tool market. Not only these, but from the scattered shops all over the South there are evidences abundant that within the near future there will be a splendid trade in those parts.

The efforts of the American Laundry Machine Company to establish a general agency in South America appears to have met with about as much success as the introduction of fire engines in Japan did some years ago. The fire engines were declined on account of the claim that if the buildings did not burn at about the average rate the carpenters would be thrown out of employment. In South America the authorities are active in opposition in behalf of the washer women, who adhere

tenaciously to the old open air process on river banks. Indeed, the hand laundries by reason of their cheapness were almost sufficient in themselves to discourage the introduction of machine washers.

The most attractive business in the whole range of machinery, however, has been, and is still, the big outfit which the Toledo Bridge Company are proposing to buy for the equipment of their new shops. Everybody in Cincinnati is after a slice of the business, and on a certain day a little over a week ago there were registered in Toledo a total of 111 salesmen from all over the United States looking after the bids of their respective concerns. It is expected that the awards will be made some time in the present week, though there is a possibility of the result being held until after the election next month.

In the matter of new shop construction the only thing in process, besides the improvements of the Lunkenheimer Company, is the erection by R. Hesterberg of a fine brass foundry and machine shop on Spring Grove avenue just opposite the Rahn-Mayer-Carpenter and the Blymyer plants. The new buildings are approximately 100 x 275 feet in size, and the shops will represent an outlay of nearly \$40,000 when complete. Hesterberg has hitherto been domiciled in quarters on Second street, which in comparison with the new shops represent almost the ultimate in bad arrangement and architectural misfit.

The first of all the Ohio River cities to establish a system of mechanical filtration for their water works is Cairo, Ill. They have let to the John H. McGowan Pump Company of this city the contract to erect two 3,000,000-gallon compound pumps, to be used for this purpose. The work is now well under way. The contract for two 1,000,000-gallon compound pumping engines for the Gallatin, Tenn., Water Works has also been taken by the McGowan Company.

The American Ice Machine Company of Washington, D. C., have let the contract for an air compressor of the Corliss-Griffin type, to be used for pumping water, to the Lane & Bodley Company. The same firm have also secured a large order for oil mill engines and pumps to be delivered in the South next May.

The I. & E. Greenwald Company are giving their shops a complete overhauling; putting in new cranes, tracks, &c., and in this connection are expending quite a little money. They have now in process a complete coal washing plant for the Chicago & Cartersville Coal Company. The capacity is to be 12,000 bushels daily, and it is to be located at Herrin, Ill.

The Millcreek Valley Railroad Company are now at work on their power house at Hartwell, this county. They are extending their tracks to Glendale, a village 15 miles north of Cincinnati, and will have them in order by the time the power house is complete. The building is to be 100 x 140 feet, of brick and iron, one story in height. It will be equipped with two McIntosh & Seymour engines, a 750 horse-power Buckeye Babcock & Wilcox water tube boiler, two General Electric Company and one Westinghouse generator, each to be 500 kw.

The contracts for the iron work for the P. R. Mitchell Company's factory, on the corner of Spring Grove and Harrison avenues, and the Crane & Hawley Building, on Court and Sycamore streets, are both being filled by the Putthoff & Frey Architectural Iron Company. An extensive contract for the Dayton, Ohio, Water Works has also gone to the same company. They have also recently contracted for a 70-foot lighting tower for Dayton.

The contract for the iron work for the seven-story and double basement building which the Pittsburgh Plate Glass Company are erecting at Broadway and Eggleston avenue, this city, has been taken by the Stewart Architectural Iron Works Company. The same concern have also landed the job for the iron work for the new Reformatory at Hutchinson, Kan.

There is quite a lot of ornamental iron work coming to the shops in this city, perhaps just at present considerably out of proportion to the amount of the heavier architectural work that is coming in.

Smith, Myers & Schnier have landed the contract for a complete 8-foot hand saw mill for St. Marks, Fla., and for a 7-foot mill for the Clay City (Ky.) Lumber Company.

The Blymyer Iron Works Company have just shipped their first order for sugar mill machinery to Tourane, in Indo-China. So far as is ascertained, this is the first shipment of machinery of any sort from Cincinnati to that country.

The Bracket Bridge Company are now at work on a 465-foot span over the Miami River at New Baltimore. Also on a 350-foot span for the new Cincinnati Water Works.

The contract for a 250 horse-power boiler for the Fleischman distilleries, this city, has been given to the Tudor Boiler Works.

Milford, Ohio, a small town 15 miles east of Cincinnati, on the Pennsylvania Railroad, is to have water

works and electric light works. The matter has been discussed for some years, but it is now thought very likely that the work will be commenced at an early date.

C. R. Talbott, a very well known iron factor of this city, is about to enter in a new line. He will build a factory on Spring Grove avenue for the making of iron bedsteads and cradles for children.

The Bradford Mill Company have recently taken several good lathe orders for Pacific Slope shops.

The Schacht Mfg. Company report a series of orders from Germany for their turned steel machine handles.

## The Cleveland Machinery Market.

Office of *The Iron Age*, The Cuyahoga, {  
CLEVELAND, OHIO, October 22, 1900. }

The uncertainty that precedes the national election has made itself more apparent during the past week than the majority of local manufacturers had anticipated would be the case. During the past month many of the prominent concerns expressed the belief that there would be little or no slack down of business and, on the whole, while the falling off has been noticeable, there has been nowhere near the stagnation that usually precedes the election. It is the general sentiment that this has been the most favorable Presidential campaign ever experienced. In a number of cases the near approach of the election has had exactly the opposite effect to what would naturally be expected. It seems that the tendency of being satisfied with the outlook has increased during the past few weeks with the result that in certain quarters there is a rush to place orders at once, in order to be on the inside of the rush of business which seems almost certain to come after election, providing, of course, the election goes the right way. Instances have been brought to the writer's attention where manufacturers and dealers have bought considerably in excess of their customary requirements. There has been considerable activity in the case of concerns requiring additions; contracts for the building material are being placed at once, although the orders for equipment are being held over. On the other hand, there are cases where manufacturers are holding over orders for machinery, in the belief that the election will go the other way, in event of which prices on machinery, according to their calculations, will show a decline. Undoubtedly there will be a pronounced increase in the volume of business in all lines, if the election results satisfactorily. On every hand there are reports of large contracts that are to be closed up in event of the continuance of the present administration, and as far as the local situation is concerned, it is known that a number of small plants and several large additions have been settled on. Manufacturers of power equipment say they have a large amount of business in sight, and the manufacturers of heavy machine tools have a similar story to tell. The demand for small tools and supplies is showing but very little decline, according to local dealers.

The molders' strike still continues a factor in the local situation, although the difficulty is slowly but surely adjusting itself. Nearly all of the imported men whose original contracts expired have returned to this city, and their evidence as to fair treatment has had the effect of inducing others to apply for work here. Secretary Pen-ton of the National Founders' Association, who is still in charge of the situation, claims to have 215 men at work in the various foundries of the city, which is nearly enough to take care of present demands. In fact, during the past week a number of the local foundrymen have notified former customers that they were in a position to take up new contracts for large quantities of materials. Some of the local machinery manufacturers are still having their work done out of town, however.

The Ajax Mfg. Company, manufacturers of heavy forging and upsetting machinery, report that they have more business at present on their books than at any previous time in their history. The past month has been decidedly good, much business coming from railway shops. They report only a slight let up during the past few days, indicating the approach of election. Among other business they have recently received orders for the following: Chicago, Burlington & Quincy Railway, Aurora shops, a 3½-inch forging machine; Barney & Smith, Dayton, Ohio, a 4-inch forging machine; Long Island Railway Company, Long Island shops, a 2½-inch forging machine; Delaware, Lackawanna & Western Railway, Buffalo and Scranton shops, a 2½ and a 2 inch forging machine; Seamless Steel Tube Company, Detroit, 3½-inch forging machine; Westinghouse Air Brake Company, Pittsburgh, 3½-inch forging machine; Spang, Chalfant & Co., Etna, Pa., 3½-inch tube upsetting machine; and the five large forging machines for Dusseldorf and Berlin, Germany. Recent shipments were as follows: Cleveland Axle Mfg. Company, Canton, large upsetting machine; Newport News Shipbuilding & Dry Dock Company, Newport News, heavy forging machine; Wm. Har-

ris & Co., Pittsburgh, 2-inch forging machine for making clevises; Boston & Maine Railway shops, a 5 and a 1½ inch forging machine and No. 7 Bulldozer; Wood, Smith & Co., Chicago Heights, Ill., heavy upsetting axle machine; Forest City Iron & Wire Company, city, upsetting machine; Dunnmore Iron & Steel Company, Dunnmore, N. J., 2-inch welding machine and No. 6 Bulldozer. They have just placed in operation in their own shops a large planer of new design, in which the entire tool travels, and the work remains stationary. The tool weighs 55 tons, and the writer saw it at work finishing a casting weighing 32 tons. With this tool it is possible to plane both lengthways and crossways and drill holes without changing the position of the casting. The tool has attracted widespread attention among builders of heavy machines, and the company booked orders for a dozen before the tool was placed in operation. The Ajax Company will place in operation this week for exhibition purposes what is claimed to be the only successful solid die rivet machine for hot rivets ever brought out. It cuts the blank from the bar, carries into the die, heads and discharges automatically, producing rivets up to 1 inch in diameter and from ¼ to 5 inches in length without changing the die.

The Cleveland Crane & Car Company report a very satisfactory demand for cranes. They have recently received an order for four large cranes from the Pittsburgh Plate Glass Company, Pittsburgh, and a second order for a 30-ton hand power crane from the Pennsylvania Steel Company, Steelton, Pa. They are shipping a large crane to the Monongahela Street Railway Company and a crane to the American Bridge Company, at Minneapolis. They note a decided improvement in deliveries of castings.

The Danielson Machine Tool Company have lately secured some very good contracts for power presses. They are shipping several large double crank presses to an Ohio manufacturer for gasoline stove work.

C. O. Bartlett & Co. report that they have a large amount of small work on hand, but large contracts are being held up. In the second-hand line they notice a very good call for small engines and boilers, and they are buying these goods freely.

The Wright Mfg. Company, manufacturers of safety water columns, have equipped a modern plant for the manufacture of these goods in the old plant of the Brush Electric Company. They report a very satisfactory amount of business on hand with a number of large contracts in prospect.

The Acme Machinery Company, bolt and nut machinery, say that their business is showing an improvement over the past two or three months, and judging from the number of inquiries there will be a decided rush of business after election. They are still considerably behind on orders, because of the inability to secure castings promptly. Their work is all being done by out of town foundries, and their patterns are scattered in all parts of the State, causing many delays.

The Snyder-Hughes Company, pumping machinery, have a large amount of small work on hand, with a number of large contracts in sight. They are preparing to ship a 2,000,000-gallon pumping engine to the Coshoc-ton, Ohio, water works, and are at work on a number of air compressors for shop work for a local plant.

The Kilby Mfg. Company, this city, were the lowest bidders on four 30,000,000-gallon pumping engines for the Cincinnati Water Works Department; bids were opened last Tuesday. Their figures were \$819,350 and \$10,000 for a traveling electric crane. The E. P. Allis Company, Milwaukee, bid \$1,044,000 and \$11,000, and the Holly Mfg. Company, Lockport, \$987,700 and \$10,000. The W. J. Gawne Company of this city were awarded contracts for building the Cincinnati water works tunnel, their figure being \$659,230. It is understood that the contracts for the pumping engines will not be awarded until after election.

The Cleveland Hardware Company have gambled on the election to the extent of placing contracts for the erection of an addition 86 x 204, three stories and basement. The new building will be used for offices, warehouse and for manufacturing purposes. The present office building will be used for manufacturing purposes, and a considerable additional equipment of presses will be required later. F. T. Brooks & Co. of this city have been awarded contracts for the structural iron work for the new building.

F. B. Stearns & Co., automobile manufacturers, are preparing plans for the erection of a new factory building east of the city. An engine, boilers and considerable equipment of machine tools will be contracted for later.

George H. Bowler, machinery dealer, and L. E. Smart, local attorney, have closed the deal whereby the McMyler Mfg. Company, hoisting and conveying machinery, are to remove their plant to Warren, Ohio. Under the terms, a large plant is to be erected employing from 350 to 400 men. Plans are now being drawn up, and it is probable that the erection of several buildings will be



decided upon. Contracts for structural work, engines, boilers, &c., will be placed next month. The style and organization of the company will continue as heretofore.

S. M. York, machinery dealer, has closed contracts with B. W. Smith, formerly with the Cleveland Brass & Iron Bed Company, for the equipment of a factory for the manufacture of brass and iron beds, to be located in New York City. The equipment consists of drop hammers, power presses, drill presses, punch press, speed lathes, small hand tools, &c. Shipment to New York will be made about December 1. The firm also report the sale of a very good order for tools for the Buckeye Rubber Company, Akron, Ohio. They are figuring on a number of large contracts which will be closed after election.

Foot, Burt & Co., multiple drill manufacturers, say they have a considerable amount of large work on hand provisional with the results of the election. They are furnishing the Pressed Steel Company, Pittsburgh, with three heavy six-spindle drills, and have recently shipped three spindle drills to Paris, also several large four-spindle drills to England. E. C. Stearns & Co., Syracuse, have ordered a large upright four-spindle drill for their new automobile factory.

The Vulcanus Forging Company are having a very satisfactory demand for small forgings. Recently they shipped a carload of forgings to the Union Pacific Railway, at Omaha, a car of forgings to the Great Northern Railway, at St. Cloud, and a car of knuckle rivets to the Chicago Car Company, Chicago.

The Bedford Chair Company, formerly of Bedford, Ohio, S. S. McMillen, manager, are erecting a new plant at Collingwood, O. They are contracting for considerable wood working machinery, and have placed a contract with the Erie City Iron Works for a 225 horse-power boiler.

The Cleveland Pneumatic Tool Company are introducing a new line of pneumatic tools consisting of calking and chipping hammers in 1½, 3 and 4 inch stroke, and long stroke riveting hammers in 5, 7 and 9 inch stroke. The tools have but a single valve of hardened steel. They have submitted samples to a number of large bridge manufacturers, who reported excellent results, and they have a number of very good contracts in sight.

The Chisholm & Moore Mfg. Company report an excellent demand for portable hoists in view of the general apathy experienced in many other lines. They are receiving some very good business from bridge builders, and among others have received a contract for a system of ten pneumatic cranes for the Youngstown Bridge Company, Youngstown. They are shipping a large pneumatic crane to the Buffalo Bridge Company, Buffalo.

Strong, Carlisle & Hammond, machinery dealers, report a generally healthy condition of business during the past month, a pronounced improvement over the summer months. During the past week, however, there has been a tapering off in anticipation of possible changes on election day.

The Cleveland City Forge & Iron Company, manufacturers of heavy forgings and turn buckles, say they are enjoying a large volume of business, but at constantly declining prices. The call for special large forgings is very slight, but, like many other people, they have a considerable amount of large business in sight which will undoubtedly materialize next month.

The local office of the Marshall & Huschart Machinery Company, Chicago, say that the business in this section has been very quiet during the past two or three weeks. Carrying no stock and not being in a position to make instant deliveries, the transient business that would ordinarily come to them is being held over until after the election. They say there is a considerable amount of good business in sight, however.

Bardons & Oliver, screw machines, say that their domestic business has dropped off somewhat of late. Their foreign trade continues strong.

The Toledo & Western Electric Railway, promoted by Luther Allen, Stewart Chisholm, Judge C. M. Stone and other Cleveland people, have let contracts for steel rails with the Cambria Steel Company. Power house equipment will be purchased in the near future.

The Columbus, London & Springfield Electric Railway have placed contracts for road equipment and are preparing plans for an extensive power house at London. It is understood that contracts for the equipment of the latter will be closed soon.

The Alden Rubber Company, Barberton, Ohio, tires and rubber specialties, are preparing to enlarge their facilities and will erect a new building and contract for new machinery. Some of the machinery has been contracted for.

The Donohue Coke Company have completed 120 of the 300 coke ovens which they are erecting at Crabtree, in the Connellsville region. In the Klondike district the Griffin plant of the Bessemer Coke Company of Pittsburgh has been started and regular shipments of coke are now being made.

## The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,  
New York, October 24, 1900.

As a result of the dissolution of the Shafting Association there is now an open market in all forms of shafting and screw stock. Prices are being cut on all sides, and values are now at a very low ebb. In fact prices are said to be within a shade of the lowest on record. Six months ago they were the highest ever known. The association which is now defunct numbered among its members all of the large manufacturers of shafting in this country, and the prices set by the pool covered the entire cold rolled, cold drawn and turned steel product. There were a few of the manufacturers of power transmitting machinery who made their own shafting who were not members of the pool, but they were not needed, as they did not supply the trade. The product controlled by the Shafting Association included 4 inch and all smaller sizes.

The last price named by the association, which was given out on July 23, was on a basis of 50 per cent. discount for carload lots and 42½ per cent. for smaller quantities. To-day the discounts given by the various companies are in the neighborhood of 60 and 10 and 65 per cent. How much lower values will go cannot as yet be ascertained. The course of the bar market will be the determining factor in this respect.

Other forms of power transmitting machinery, including pulleys and hangers, also underwent a decline, which amounts to about 10 per cent.

While wood split pulleys are not especially firm in price there has been no material decline.

As regards the other branches of the machinery trade, the market reflects a most encouraging situation. In almost every quarter it is enthusiastically stated that an improvement is to be noted. Business thus far this month is said to have been much better than it was during the preceding one. The number of extensive projects which are being prepared for final consummation as soon as the political situation has cleared is constantly growing. The number of orders for machines for immediate delivery has also increased somewhat. These orders are in most instances for but one or two machines, but they come from the large, well-known concerns, and in the aggregate they make pretty good business. The orders for a great number of tools are not always the most desirable and profitable kind.

The large number of machine tools which are being taken by the Government constitute an item of interest. Besides the heavy list for which the Ordnance Department will receive bids on the 30th of this month for the Rock Island Arsenal, a fair quantity of machine tools, &c., are about to be purchased by the Navy Department. On October 30 bids will be received for a fair lot of punching and shearing machines, hammers and other tools for both the Boston and Norfolk navy yards. Bids will be received until November 13 for 20 wood working machines, a number of iron working tools and engines, for the Puget Sound Navy Yard, and on the same date a number of millers, rolls and a horizontal boring machine will be bid on for the Mare Island yard.

In our issue of last week reference was made to a large shipbuilding project now under way in this vicinity. It is now said that the parties who were spoken of in connection with this work are interesting themselves in Hoboken, N. J. Former Mayor Herman Walker of Guttenberg, N. J., who owns considerable land along the Hoboken water front, corroborated this last week by stating that he had practically completed arrangements for the sale of a large strip of land along the New Jersey shore of the Hudson River opposite to that between Sixtieth and Seventieth streets, New York, to a Western syndicate whose members would erect large shipbuilding yards and dry docks on the site. The sale is pending the result of the election.

There are now indications that the long planned system of car and repair shops of the Central Railroad of New Jersey will actually be built and at an early date. Arrangements have been completed and an announcement of the fact is soon to be officially made by the company. The bids of the steel mills for the structural steel required in the erection of the numerous buildings are now in the hands of the architects. The shops are to be built at Elizabethport, N. J.

Acting through a Russian export firm, Manning, Maxwell & Moore are arranging for the equipment of five machine shops for the Russian Government. They are to be built in the vicinity of Vladivostok, along the route of the Chinese Eastern Railway. The power transmitting machinery will be furnished by the George V. Creson Company of 141 Liberty street and Philadelphia.

An order authorizing the sale of the assets and plant of the Stockton Mfg. Company of Newark, N. J., was made by Vice-Chancellor Stevens this week. The Stockton Mfg. Company, formerly the Warwick-Stockton Mfg. Company, were declared insolvent last May. The concern

made bicycle fittings and parts and the plant is well equipped with modern machinery. The liabilities are said to be \$120,000. Judge Frederick F. Guild of Newark, N. J., was receiver for the company.

The Taylor Steam Economist Company, whose offices are located at 271 Broadway, New York, have purchased a partially constructed building at Harrison, N. J., and are now buying machinery with which to equip it. The device which they will manufacture is a form of economizer, to be used in connection with boiler plants. Among the machinery which they have already purchased is an engine and boiler plant which will be furnished by L. Copleston of 39 and 41 Cortlandt street, who represents the Watertown Steam Engine Company.

Some time ago we alluded to a new automobile company recently formed and backed by substantial interests. The company referred to are the New York Motor Vehicle Company, whose offices are located in the Standard Oil Building, 26 Broadway. It is stated on good authority that the project is backed by men who are identified with the Standard Oil Company and are prominent in various ways in that company's outside interests. Last week the new company purchased the machinery and equipment and plant of the Worcester Cycle Company of Middletown, Conn. The purchase was made at auction by the American Surety Company of New York, the mortgagees, who in turn transferred the entire property to the New York Motor Vehicle Company. This plant is well known to men in the machinery trade, as the former owners spent considerable money in equipping it with high-class tools a short time ago. Additional machinery will be purchased by the new owners, and it will be fitted out as a first-class automobile factory. The company will build all styles of carriages propelled by a steam motor with kerosene used as fuel. They are having several vehicles built now which will be exhibited at the coming Automobile Exposition at Madison Square Garden.

Owing to the rapid growth of their business in France, the Sprague Electric Company have formed in Paris, France, an organization to be known as the Société Française Sprague. The new company will have offices at 6 Rue de Madrid. The French company will also take care of other Continental European business. The American company have just shipped to Paris a large consignment of motors, trucks, controllers and other electrical apparatus.

Purchases are being made in this market of equipment for the Cuban Central Railroad. Buckley & Co. of 257 Broadway, New York, are the purchasing agents.

A lower Broad street export firm have recently been asking quotations on about two carloads of machine tools for early shipment to Copenhagen. A large engineering concern of Liberty street booked an order for six large pumping engines last week, to be sent to Denmark.

Carl Kratz, a representative of De Fries & Co., the large machinery importers of Duesseldorf and Berlin, and B. O. Bogert, an engineer representing the same concern, are now making a visit among the machinery manufacturers of this country. Mr. Bogert was formerly identified with the Fay & Egan Company of Cincinnati. The object of their visit is principally to arrange for the European representation of new American mechanical devices and machine tools. They are at present in the West and are expected to return to New York within about a fortnight. Correspondence addressed care of Knauth, Nachod & Kuehne, New York, will be forwarded to them. While in New York they will make their headquarters at the offices of the latter concern. De Fries & Co. are at present representing several large American machine tool builders abroad.

Information which has recently been received by parties in the trade is to the effect that extensive works will be built at Muhlburg, Germany, by the Karlsruhe Maschinenbau Gesellschaft. The new plant will be utilized in building steam engines and locomotives. The company are about ready to purchase the entire equipment of machinery required in the equipping of the shops. The machinery will be electrically operated from a central power station. Another large project which is about to be launched on the market and which will require a considerable amount of machinery is being promoted by the Nordische Electricitäts und Stahlwerke Gesellschaft of Danzig, Germany. This company, it is said, have recently acquired a large tract of land at Posen, and will build boiler shops, structural steel mills, a bridge building department and a large iron foundry.

Work is now under way on a large building which will be equipped as a planing mill by the Pennsylvania Railroad. The building is to be 235 x 72 feet, and the location is a site adjoining the company's meadow shops on the outskirts of Jersey City, N. J. The company are about to purchase a large equipment of wood working machinery to install in the new shop. Another building, which will be 90 x 60 feet, is also in course of erection at the same place. This will be used as a lumber store-

house. Sanford & Stillman are erecting the buildings, which will have corrugated iron sides. Division Engineer Barker is in charge of the work. His office is in the Pennsylvania Railroad building at Jersey City, adjoining the large terminal depot.

A \$15,000 addition is about to be built to the brewery of Christian Feigenspan, at Newark, N. J. The new building will be an extension to the ale brewery, and an increase to the power plant will also be required. Hooper & Co. of Newark, N. J., are the architects in charge.

Notice has been given that the sale of stock, fixtures, &c., of James R. Floyd's Sons' Foundry, has been postponed until November 8, by M. J. Drummer, the assignee.

## Trade Publications.

**Hoisting Machinery.**—The M. C. Bullock Mfg. Company, Chicago, Ill., have issued their catalogue No. 42, covering hoisting machinery. This catalogue treats of standard hoisting drums, geared multiple plants, direct acting hoists, single and double hoists, conical drums, geared reel hoists and double reel hoists. In each case illustrations are given showing not only perspective views, but also plan views, sectional drawings and detailed descriptions, together with tables showing the capacities of different sizes. The hoisting machinery manufactured by this company is adapted to all requirements of mining plants and other hoisting operations involving the lifting of heavy materials at a high rate of speed with economy and safety. The catalogue also gives an illustration of the company's self-contained steam reverse engine for operating the link motion reverse of hoisting engines. A long list is given of prominent mining companies now using the Bullock hoisting machinery.

**Shears, Punches and Bending Rolls.**—The Hilles & Jones Company of Wilmington, Del., have prepared a catalogue describing their various lines of punches, shears and rolls for working plates, bars and structural shapes. Their universal shears are designed for splitting or trimming plates and cutting off round, flat and angle bars. In order to obtain the proper clearance for splitting wide plates and still retain the necessary strength and rigidity, the main frame castings are made of steel. Their bar and billet shears for cutting off round, flat and angle bars are arranged to be driven either by electric motor or steam engine. Their rapid action punches are intended to operate at a speed of 65 strokes per minute. They are arranged to be driven by a belt on the fly wheel, and are provided with a substantial automatic clutch for starting and stopping the sliding head. In these a great variety of sizes and depths of throat may be obtained.

**Bolt Threading Machinery.**—A catalogue from the Webster & Perks Tool Company of Springfield, Ohio, describes their bolt threading machines. The simplicity of construction of these machines and their convenient arrangement for attaching special features for either threading or tapping parts, and the fact that each spindle is an independent threader of itself, and that each spindle has a positive automatic reverse motion always to within  $\frac{1}{4}$  revolution of the spindle, adapt them to the greatest variety of work, which together with the completeness of their appointments, makes them one of the foremost threading and special tapping machines. We have also received from the same company a circular concerning their grinding and polishing machinery. In the design of these machines particular attention has been paid to the oiling devices which are so formed as to insure perfect lubrication.

**Drop Forges.**—A circular from Wyman & Gordon of Worcester, Mass., shows a pair of dies such as they use in their hydraulic presses for making car coupler knuckles. These dies weigh 1250 pounds per pair. The forgings produced from them weigh 70 pounds each, and are made from flat billet steel. The largest of the hydraulic presses handling these dies exerts a pressure of 1200 pounds.

**Watt Meters.**—A catalogue just received from the Fort Wayne Electrical Works of Fort Wayne, Ind., describes their type K integrating meters. These meters are especially designed to register accurately the energy of alternating current circuits regardless of the power factor. The meter is light and substantially constructed, all parts being standard and interchangeable.

**Gas and Gasoline Engines.**—A catalogue has been received from the Olds Motor Works of Detroit, Mich., describing their gas and gasoline engines, which gives illustrations and descriptions of the various types of carriages to which these motors have been applied.



# HARDWARE.

## Condition of Trade.

**T**RADE gives some evidence that the attention devoted to the Presidential canvass has its effect in restricting business, but the demand continues excellent. Orders are for the most part of moderate size but well assorted, and the retail trade are the most active purchasers. The jobbers, however, are finding it necessary to stock up on a good many lines, and in some cases are placing orders of respectable dimensions. One of the gratifying features of the situation is the comparatively small disturbance of business by the attention given to political matters. The conservatism which is evident in the buying of representative houses is not so much on account of the coming election, or any uncertainty about its result, as the feeling that the natural course of prices will continue for some time at least to be toward lower values. The condition of the market, however, is such as to make the trade feel reasonably secure in purchasing in sufficient quantities to meet current needs.

### Chicago.

(By Telegraph.)

The demand for Shelf Hardware keeps up surprisingly well in view of the rapidly approaching Presidential election. The trade has lost none of its recent characteristics. Jobbers are being crowded to their utmost in meeting the requirements of the retail trade. All buying is in small lots for immediate use. No indication yet appears of a disposition to stock up. The demand for staple goods, such as Wire Nails and Wire, is an especially conspicuous feature of current trade. The quantity of such goods moving is in excess of the corresponding time last year. Manufacturers' agents feel the approach of the election much more than jobbers. They note increasing conservatism on the part of their trade which they ascribe to the election, and the caution is a natural accompaniment of the important issues at stake in this fall's campaign. It is believed, however, that the quieter trade is now the more active it will be after the election. The quietness is accompanied by weakness in a few lines of manufactured products, but such irregularities are to be expected. The demand for Heavy Hardware is very good, and the outlook is considered extremely encouraging for the remainder of the year.

### St. Louis.

Jobbers consider the business now in action as really remarkable; sales this month seem to be ahead of those of last October. In point of fact, some claim that the result of the November election has been largely discounted, and that buying is of a more generous character in consequence. Fall goods are in brisk demand, and being in a somewhat later call from dealers than usual jobbers and manufacturers are hard pushed for deliveries. If trade prospects do not meet with an interruption, which is not now looked for, the active business is expected to continue well into December. Consumers' wants cover a wide range of items, and as counter sales just now are quite generally felt at warehouse and factory, trade as a whole is being benefited. Considering that more limited quantities are being handled by all concerned, it is complained that some items are being sold on too close margins. Salesmen are stirring up headquarters occasionally about the disappointment of customers in having shipments delayed, which is perhaps but the inevitable result of carrying more limited

stocks all around. Voluntary orders for miscellaneous needs carry quite good specifications for Wire Nails. It is evident the retail trade has no great amount of stock of this article.

## Notes on Prices.

**Wire Nails.**—The condition of the Wire Nail market shows no particular change. Demand continues urgent, but mostly for small lots. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.20
To jobbers in less than carload lots.....	2.25
To retailers in carload lots.....	2.30
To retailers in less than carload lots.....	2.40

**New York.**—The distribution of Wire Nails in small lots from store continues in fair volume. Prices are steady. Quotations are as follows:

To retailers, carloads on dock.....	\$2.48
Small lots from store.....	2.55

**Chicago, by Telegraph.**—Manufacturers of Wire Nails report one of the heaviest week's business they have ever had. Specifications are being received with every order. Buyers all want immediate shipments. Whenever shipments fail to come to hand within two or three days after an order is placed the wires are kept hot with urgent requests. This shows how light stocks must be in the distributing trade. Jobbers also report a heavy movement from stock with no indication of abating. Prices are unchanged at \$2.35 for carload lots and the usual advance for small lots.

**St. Louis.**—Dealers' orders for Wire Nails, which, in not a few instances call for direct shipments of carloads from mills, foot up a handsome tonnage. There is a decidedly encouraging outlook for an active trade which will not be interrupted until inclement weather sets in. Price in carloads to retailers is \$2.40, base; smaller quantities, \$2.45, base.

**Pittsburgh.**—We continue to note a satisfactory Wire Nail market. Demand is active and jobbers are placing larger orders for Nails than for some time. The impression exists in the trade, and is growing, that any change in the price of Wire Nails will be in the direction of higher figures. For this reason there is more inclination to place large orders. The unevenness in price on small lots of Wire Nails, before referred to, has, we are advised, almost entirely disappeared. We quote, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days, as follows:

To jobbers in carload lots.....	\$2.20
To jobbers in less than carload lots.....	2.25
To retailers in carload lots.....	2.30
To retailers in less than carload lots.....	2.40

**Cut Nails.**—Cut Nails continue in fair demand, the aggregate being made up of numerous small lots. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, 2 per cent. off in 10 days:

Carload lots.....	\$1.95
To jobbers in less than carload lots.....	2.00
To retailers in less than carload lots.....	2.10

**New York.**—Since the jobbers came to an understanding regarding prices, the local market has been more even. Demand continues in about former volume:

To jobbers in carload lots on dock.....	\$2.13
To jobbers in less than carload lots on dock.....	2.18
To retailers in less than carload lots on dock.....	2.31
Small lots from store.....	2.25

**Chicago, by Telegraph.**—The movement in Cut Nails keeps up to the increased volume which has recently been reported. Small lots from stock are quoted by jobbers at \$2.25.

**St. Louis.**—The regular trade is in force, with a good demand for small sizes of Cut Nails. Price remains \$2.30 to \$2.40, base.

**Pittsburgh.**—There is a moderate volume of business in Cut Nails, demand recently having shown some improvement. We are advised that established prices are being better held than for some time. We quote, f.o.b. Pittsburgh, terms 60 days, 2 per cent. off in 10 days, as follows: Carload lots, \$1.95; jobbers, less than carload lots, \$2.

**Barb Wire.**—Domestic demand for Barb Wire is very light. Quotations remain unchanged, as follows, f.o.b. Pittsburgh, net cash 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.50
To jobbers in carload lots, Galvanized.....	2.80
To jobbers in less than carload lots, Painted.....	2.55
To jobbers in less than carload lots, Galvanized....	2.85
To retailers in carload lots, Painted.....	2.60
To retailers in carload lots, Galvanized.....	2.90
To retailers in less than carload lots, Painted.....	2.70
To retailers in less than carload lots, Galvanized...	3.00

Ellwood and Baker Wire is 5 cents and Washburn & Moen Glidden 10 cents per 100 higher than the foregoing prices.

**Chicago, by Telegraph.**—While orders for Barb Wire are not running as heavy as for Wire Nails, the business now being booked is larger than at any previous time during this fall. Local jobbers report some falling off, but they are still having a good trade. Prices are maintained at \$2.70 for Painted and \$3 for Galvanized Wire from stock, with the usual reduction on carload lots.

**St. Louis.**—Trade in Barb Wire this week shows practically no let up. The weather continues very favorable to fence repairs, and farmers are taking advantage of it. Price of Painted in carloads to retailers is \$2.70; smaller lots, \$2.75. Galvanized is 30 cents higher.

**Pittsburgh.**—Demand for Barb Wire is light, and will continue so during the winter months. There is a large export trade in Wire, and it is steadily increasing. We quote as follows: Galvanized Barb Wire, \$2.80, in carload lots to jobbers, and Painted, \$2.50. Terms, 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

**Plain Wire.**—Orders for Plain Wire are for small lots to a great extent. Demand is moderate. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	
	Plain.	Galv.
To jobbers in carload lots.....	\$2.15	\$2.55
To jobbers in less than carload lots.....	2.20	2.60
To retailers in carload lots.....	2.25	2.65
To retailers in less than carload lots.....	2.35	2.75

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the advances indicated in the following table:

**Plain Fence Wire Advances (Catch Weights).**

Nos.	Base	Galvanized.
6 to 9.....	\$0.05 advance over base.....	\$0.40 extra.
10.....	.10 " " " " " " " " " " " "	.40 "
11.....	.15 " " " " " " " " " " " "	.40 "
12 and 12½.....	.35 " " " " " " " " " " " "	.40 "
13.....	.35 " " " " " " " " " " " "	.40 "
14.....	.45 " " " " " " " " " " " "	.75 "
15.....	.55 " " " " " " " " " " " "	.75 "
16.....	.70 " " " " " " " " " " " "	1.00 "
17.....	.85 " " " " " " " " " " " "	1.00 "
18.....		

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

**Chicago, by Telegraph.**—Manufacturers of Plain Wire continue to report an excellent demand. Jobbers are also doing a fine business. Small lots, Chicago delivery, are quoted at \$2.35, base.

**Pittsburgh.**—There is only a fair demand for Plain Wire, and with breaking up of the weather it will likely fall off. We quote:

	Plain.
To jobbers in carload lots.....	\$2.15
To jobbers in less than carload lots.....	2.20
To retailers in carload lots.....	2.25
To retailers in less than carload lots.....	2.35

Galvanized Wire up to No. 14 is 40 cents advance on Plain, Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. discount allowed for cash if paid in 10 days from date of invoice.

**Stove Boards.**—We give below the Stove Board list now in use, in which it will be observed there are a number of changes as compared with the list of last year. While the 1899 list is to some extent used, the one given below is that used by the manufacturers. The prices ruling are referred to by some of the manufacturers as being below the cost of production and orders are in some cases declined on this account. The list in use this season is as follows, current market prices in ordinary lots being represented in a general way by the discount of 50 and 10 per cent., a discount of 60 per cent. being obtained by large buyers:

Stove Boards.							
Round.	Paper lined.		—Wood lined.		Embossed.	Crystal.	Oxidized.
	Alumi.	num.	Embossed.	Zinc.			
24.....	Embossed.	6.00	6.00	7.20	.....	.....	.....
26.....	5.40	6.72	6.00	7.80	.....	.....	.....
27.....	.....	.....	.....	.....	9.60	10.80	10.30
28.....	6.00	7.56	7.20	8.64	.....	.....	.....
30.....	6.60	8.64	7.80	9.60	10.80	12.00	11.40
32.....	7.44	9.84	8.40	10.80	.....	.....	.....
33.....	.....	.....	.....	.....	12.00	13.80	12.60
34.....	8.40	11.40	9.00	12.00	.....	.....	.....
36.....	9.60	13.20	10.20	13.20	13.20	16.20	13.80
Square.							
24 x 24.....	5.40	6.00	6.00	7.80	.....	.....	.....
26 x 26.....	6.00	6.72	6.72	8.64	9.60	10.20	10.30
28 x 28.....	6.72	7.56	7.56	9.60	10.80	11.40	11.40
30 x 30.....	7.56	8.64	8.64	10.80	12.00	12.60	12.60
32 x 32.....	8.64	9.84	9.84	12.00	.....	.....	.....
33 x 33.....	.....	.....	.....	.....	13.20	14.40	14.40
34 x 34.....	9.72	11.40	11.40	13.20	.....	.....	.....
36 x 36.....	10.80	13.20	13.20	14.40	14.40	16.80	16.80
Oblong.							
24 x 36.....	7.80	8.40	8.40	10.20	10.80	11.40	11.40
26 x 30.....	7.80	8.40	8.40	9.60	.....	.....	.....
26 x 32.....	.....	.....	.....	.....	10.80	11.40	11.40
28 x 32.....	8.40	9.60	9.60	10.80	.....	.....	.....
28 x 34.....	.....	.....	.....	.....	12.00	12.60	12.60
30 x 36.....	9.60	11.40	11.40	12.60	.....	.....	.....
30 x 38.....	.....	.....	.....	.....	13.80	15.00	15.00
32 x 42.....	12.00	13.80	13.80	15.00	15.60	18.00	18.00

**Cordage.**—An advance in the price of Hemp has had the effect of stiffening the Rope market without causing an advance in prices. Merchants are carrying lightstocks, and are ordering often as demand necessitates. Manufacturers' quotations, according to quantity, are as follows: Manila Rope 7-16 inch and larger, 9 to 9½ cents per pound; Sisal Rope on the same basis, 6 to 6¼ cents per pound.

**Sash Weights.**—The Sash Weight market, while characterized by some irregularity in price, is regarded by the manufacturers as in fairly good condition. The demand, however, is only moderate. There has been for some time a material difference in the Eastern and Western prices, but a recent reduction in the Eastern, of from \$4 to \$5 a ton, brings them more nearly to the Western level. The prices of the Eastern manufacturers are now represented in a general way by the quotation of \$20 to \$23 per ton, according to the size and conditions of the order. Western prices are represented by the quotation of \$18 to \$19, though in some cases the lower figure is slightly shaded.

**Shovels.**—It is understood that the Laughlin Nail Company, Wheeling, W. Va., have made terms with the Shovel Association in accordance with which they will give up the manufacture of this line. Their competition apparently became sufficiently troublesome to the combination to lead them to present inducements too attractive to be resisted. The position of the Shovel pool is thus apparently strengthened, as they have succeeded in buying off nearly all competitors and are in practical control of the market. It is reported, however, that new competition is under way.

**Wire Picture Cord.**—The market continues in practically the same condition as last week, there being a good deal of confusion on account of the failure of the manufacturers to unite in the adoption of a common list. In the meantime prices seem to be pretty evenly maintained on about the former basis.



**Glass.**—An order for 500,000 boxes of Window Glass is reported as having been placed with the American Window Glass Company by the National Jobbers' Association. It is said that the contract represents an outlay of nearly \$2,000,000, and that all sizes of Glass are represented. Under the terms of the contract the National Jobbers' Association is to furnish specifications for portions of the order on one date in October and on two dates in November. The American Window Glass Company's new prices are understood to be based on the Glass list of January 1, 1898. A paper devoted to Glass interests gives the prices made by the American Company to the Jobbers' Association, and compares them with former prices, as follows:

Figured generally, the new discounts show no material change in prices. The small sizes have been cut to bring them down from the abnormal conditions created by the spring shortage. The new discounts show the following changes: Single strength, first bracket, 85 and 20, a decrease of 10 per cent.; second and third, 85 and 25, a decrease of 10 per cent.; all above, 90, an advance of 5 per cent. Double strength, first five brackets, 89, no change; 60 and 70 inch, 90; no change in 60-inch, but 15 per cent. advance on 70 bracket; all above, 90 and 10 and 5. This last does away with all above 100-inch bracket at 90 and 20; and 120 and above at 90, the simplification being made at the request of the jobbers.

It is reported that the prices asked of the jobbers by the American Company are much lower than the discounts given out, and that there will be no rebates this season. The National Jobbers' Association have announced revised discounts which apply to the jobbers' list of September 1, 1900, and are uniform all over the United States. The new prices are, for small lots, as follows:

All single strength..... 85 and 25 %  
All double strength..... 85 and 25 and 5 %

An advance of 10 per cent. is to be added for all first-quality Glass, both single and double strength. No price on carload lots has yet been made. One discount for all single and another for all double strength Glass simplifies the matter of prices and will be appreciated by the trade. Prices are now generally made from the September 1 list.

**Paints and Colors.**—*Leads.*—The White Lead in Oil market has shown more activity during the past week owing to an impression that manufacturers would advance prices as a result of higher values of Linseed Oil. On the 25th inst. manufacturers will announce an advance in White Lead in Oil of  $\frac{1}{4}$  cent per pound, making quotations as follows: In lots of 500 pounds and over, 6 $\frac{1}{2}$  cents; in lots of less than 500 pounds, 7 cents per pound.

**Oils.**—*Linseed Oil.*—Two advances in the price of Linseed Oil have been made during the past week—7 cents on the 18th and 5 cents on the 20th. Quotations are as follows: City Raw, in lots of 5 barrels or more, 75 cents; in lots of less than 5 barrels, 76 cents. State and Western brands are held at 73 to 74 cents per gallon for Raw. These advances have come as a surprise to the trade generally, present prices being higher than for a number of years. The advances are attributed to short interests in September Oil, together with the small quantity of Flax Seed which has reached the market and the uncertainty of the size and quality of the new crop of Seed. Those in the trade are inclined to believe that the estimate of a 22,000,000-bushel crop will have to be cut down considerably.

### Requests for Catalogues, &c.

**A** NEW firm under the style of Pool & Sill will shortly embark in the Hardware business at Watertown, N. Y. They intend to make their store as convenient and attractive as possible, and will carry a full line of Shelf and Heavy Hardware, Bar Iron and Steel, Agricultural Implements, Sporting Goods, Dairy Supplies, &c. Mr. Pool, the senior member, has been identified with the trade for the past 12 years. The firm will be glad to receive catalogues, quotations, &c., relating to the above lines, as they are about to purchase stock.

L. D. Redick has succeeded B. K. Redick in the Shelf Hardware, Stove, Tinware, Agricultural Imple-

ment, Buggy, Bicycle and Sporting Goods business at Jenera, Ohio. The establishment has lately been enlarged, and now has a 60-foot plate glass front. The former store was 20 x 160 feet, to which an addition, 40 x 40 feet, has been made. Mr. Redick will appreciate copies of catalogues, price-lists, &c., from manufacturers and jobbers.

## Hardware Organizations.

### National Hardware Association.

Active preparations are being made in connection with the programme for the sixth annual convention of the National Hardware Association. While it is not yet entirely completed, it is announced that at the opening session on Wednesday, November 21, addresses of welcome will be delivered by Governor Tyler of Virginia and Mayor Taylor of Richmond, and possibly some leading citizens of Richmond, representing the commercial interests. Delegates from the National Hardware Association of Great Britain and the Canadian Wholesale Hardware Association will be present. Following the annual address of the president and report of the secretary-treasurer, a colloquy on the subject "Is the Jobber Essential as a Distributer or Should Manufacturers Perform this Service?" will be held, in which some of the most prominent men at the head of various manufacturing institutions of the country will participate.

On Wednesday evening a mock trial will be held in connection with the smoker. All the talent connected with this trial will be taken from the ranks of the members of the association and the visiting manufacturers. On Thursday evening another colloquy will be held, the subject being "Market Conditions: Are Not Present Values on a Reasonably Sound Basis?" This event, of course, will be open to all manufacturers and visitors. On Friday the annual banquet of the association will be given.

Already a larger number of delegates have engaged rooms for the convention than has been the case on any previous occasion. The manufacturers who visit the convention will be made quite welcome, and a large number of them have signified their intention to be present.

### WESTERN DELEGATION TO NATIONAL HARDWARE ASSOCIATION CONVENTION.

The following circular, which has just been issued, carries its own explanation:

The committee having in charge the proposed trip from Chicago to Richmond to attend the convention of the National Hardware Association of the United States, beg to advise the following preliminary arrangements, which are the result of interviews and correspondence with those who expect to join the party:

It is the intention to leave Chicago via the Pennsylvania Railroad on Monday, November 19, at 12.30 noon, reaching Washington Tuesday afternoon at 1 o'clock. Leave Washington Tuesday afternoon at 3.12 o'clock and reach Richmond same day at 6.30 o'clock.

Those who desire to join the party are requested to purchase their tickets via the Pennsylvania Railroad, and via Chicago to Richmond, and at the time of purchase to secure from the ticket agent a certificate, which will be countersigned by the secretary of the National Hardware Association, and which will entitle the holder to return at one-third rate, making the round trip at one and one-third rate. A ten-days' stop over in Washington will be allowed, which will give those in attendance an opportunity of visiting New York, Philadelphia, Boston or other points as is desired.

Those who desire to join the party and have not already notified the committee are requested to do so as soon as is convenient. For any further information address H. H. Roberts, 1205 Fisher Building, Chicago.

Respectfully yours,

S. S. GOULD,  
Representing St. Louis Shovel Company, St. Louis.  
W. H. BENNETT,  
Manager Reading Hardware Company, Chicago.  
H. H. ROBERTS,  
Manager The Iron Age, Chicago.

We are advised that so many have already sent in their acceptances that quite a large party is assured. It will certainly be found much more pleasant to travel in a body from Chicago in a special car, or two special cars if this is justified by the size of the party, than to make the trip to Richmond singly, as would otherwise be the case.

#### Minnesota Retail Hardware Association.

The next annual meeting of the Minnesota Retail Hardware Dealers' Association will be held in Minneapolis on the fourth Wednesday in February, 1901, continuing three days. The following address in connection with this announcement is made by Thomas McCracken, the secretary of the association:

We want every Hardware dealer to lay aside his business cares and meet with us. This association is educational and instructive in all ways appertaining to your business life; moreover, it is intended as a social gathering of business dealers, interested as you are in everything that will advance the ideas and enlarge the views of the Hardware trade as a whole. It is not, as many seem to think, a cure all for all the grievances that beset your business life, but is beyond question the avenue through which you can put into practical operation any ideas you may have looking toward the betterment of trade relations in your own town, with the assured assistance of the association throughout the State.

We want a large and prosperous organization of the Hardware dealers throughout the State. We have rights to maintain and wrongs to right, that nothing but organized effort can successfully combat. Your business and everything relating thereto is, or should be, a study, to which you should give your earnest thought and untiring energy. This is an age of improved methods in the handling of all lines of merchandise; old forms are being replaced by new, and with them come other demands upon you as a merchant. The buying public are less discerning to-day, but are far more impatient. Ways and means are at your hand, if properly applied, to meet these changed relations and to retain and increase your trade. These and many other matters you learn of by associating together in an organization devoted to your interests.

We have heretofore offered to any Hardware dealer who joins with us prior to our next annual meeting to refund to him all moneys paid us—if they attend the meeting and then inform us they are dissatisfied. This offer we again make you. If not a member send in your name and be enrolled upon our list.

Our insurance plan most surely saves you money, while it gives you absolutely safe protection from fire loss at the lowest possible cost. It is no money making scheme for a few individuals, but is founded upon plain, simple and reasonable principles, easily understood and alike equitable to all. Every individual policy holder is individually equally benefited, share and share alike. It is a savings bank whose dividends are returned to you—its management is in the hands of its policy holders, its funds are deposited to their credit and cannot be diverted therefrom.

We would be glad to have you take these matters into consideration—if you do so we do not think you can find one valid reason why you should not come with us. Reduced railroad fare and hotel accommodations will be provided, and we can assure you a royal Minneapolis welcome.

#### Kelly & Jones Company's New Catalogue.

THE KELLY & JONES COMPANY, Greensburg, Pa., and 13-21 Park row, New York, have just issued illustrated and descriptive Catalogue H of Brass and Iron Goods for steam, gas, water and oil, together with a number of Tools and Specialties. The book is finely printed and contains 243 pages 9 x 12, bound in cloth. This edition is especially designed for wholesale trade, and does not conflict with or retire Catalogue F. They are also about to issue similar editions in reduced form for the export trade, which will be printed in German, French and Spanish. There are a number of new goods which have just been brought out.

S. L. Fell & Co. on or about October 25 will open a new store at 7 West Fourth street, Wilmington, Del. They will carry Shelf Hardware, Cutlery, &c.

#### British Letter.

FROM A SPECIAL CORRESPONDENT.

MORE than a year ago I announced in your columns that one outcome of the war in South Africa would be a Dutch trade boycott of British goods. I was writing then with a full knowledge of the intentions of a certain number of prominent Dutch traders, and I am now in a position to announce that the idea has materialized in a very substantial form.

#### South African Prospects.

BOYCOTTING BRITISH GOODS.—A company with a capital of \$1,000,000 have now been started, and the trade organization is rapidly being completed. One of the promoters of this extraordinary business is at the present time in this country (England), and negotiations are proceeding between him and a well-known British accountant in the North of England, with a view to this gentleman taking the secretaryship of the company. The company in question will appeal to the Dutch traders throughout South Africa to support them on the ground that they are buying their goods from anywhere except from Great Britain.

GERMANY AND AMERICA FAVORED.—Several German firms have been approached, and I understand that purchases to a considerable extent have been made. I can also state with authority that American manufacturers who have suitable goods will be favorably considered. I am not disposed to prophesy great things for this company, because the experience of history proves conclusively that men do not buy for national or sentimental reasons, but on a purely commercial basis, such as quality and price. I mention the incident to show that the Dutch trading element in South Africa is at the present time antagonizing British merchants, and that, therefore, it is a good opportunity for German and American exporters to assert themselves.

NEW YORK HOUSES IN IT.—Several New York shipping houses are already well and favorably known, but as the trade increases, as it doubtless will in the course of the next few years, direct trading is certain to grow in proportion. Of course the majority of traders in South Africa are Britishers and Germans. The Dutch Afrikaner is essentially pastoral in his avocations.

#### Imported Hardware and Cutlery.

The imports of Hardware and Cutlery into Great Britain are as yet comparatively small, but year by year they are showing a significant increase. Last month \$360,000 worth of Hardware was landed in British ports and \$5000 worth of Cutlery. During the nine months ended September 30, \$70,000 worth of Cutlery (mostly German and cheap) was bought by British merchants, and considerably over \$3,000,000 worth of Hardware. I have been worrying the statistical department of the British Board of Trade for more detailed information for the benefit of your readers, and they inform me they will do their best to let me know definitely what is the exact proportion of American manufactures in this department and what are the particular kinds of Hardware included.

SEWING MACHINE AND LIGHT MACHINERY IMPORTATION.—In addition to Hardware and Cutlery \$70,000 worth of Sewing Machines and \$1,000,000 worth of light machinery were imported in the month of September, while the value of Sewing Machines imported in nine months exceeded \$1,000,000. There are several American Sewing Machines now being sold over here, but I think the majority of the Sewing Machines are of German make.

#### A Prospective Trade.

I remember a long time ago recommending any of your readers who were interested in it to consider the prospect of supplying English shops with American Electric Fans. I pointed out that although the English summer is by no means so long or as trying as yours, yet while we have it, it is distinctly sultry. The summer is now gone, and I have not seen an American Fan in



London. The suction ventilating Fan we have in abundance, but everybody knows from practical experience that it is not nearly so effective as the American revolving Fan. This is the time to prepare for next summer, and I therefore again draw attention to the possibilities of American trade in this direction.

#### India.

It is a far cry from London to India. I see, however, that some American houses are feeling their way in the Indian market. There are one or two comments I should like to make for the guidance of American Tool manufacturers upon the native Indian artisan. To begin with the manufacture of first-class steel in India is extinct. Scrap steel supplies the bulk of the artisans with material for their tools; indeed these tools are at the present time primitive in the first degree. The artificer in India is practically devoid of mechanical ingenuity. For example, he continues to use a long Screw Driver with a small badly shaped point and spoils every Screw he touches. It never dawns upon him to cut the long blade into two pieces and so make two Screw Drivers of different sizes.

**PRIMITIVE METHODS.**—The villages on the Himalayas are built of timber, and yet there is not a single Gang Saw to be found outside the sphere of influence of the English engineer. The villager fells a tree with the axe, cuts it into lengths of 6 or 7 feet, splits these into slabs with wedges and trims them into boards with a small Adze, which is also a Hammer and a Chisel. The length of time occupied in doing this is enormous, but time hardly seems to count. These villagers must be taught to purchase Planes, modern Axes, good Chisels and other similar tools. The Indian villager uses his tools to serve the purpose of a Tenon Saw and, as often as not, a Hand Saw. I quote the following expert remarks upon this subject:

**CARPENTERING IN INDIA.**—"A Fiddle Drill of wood with loose points takes the place of Brad Awl, Gimlet and Hand Brace; his rule is a stick with notches; and with this outfit he will build a house, a cart, a boat, or a chest of drawers. It is plain that there is not very much in the ordinary ironmonger's stock that appeals to such a man. Of door and window fittings he must buy a certain number, and also of Wire Nails, Screws and Hinges, but he buys nothing that he can possibly dispense with. Still, he needs a much greater stock of tools, and must learn to use them. At the same time his ideas of economy cannot be upset all at once, and cheap steel of suitable sizes, even if the quality is inferior, offers a step in the right direction. One of the objections to File steel is the trace of the teeth on the surface of tools made from it, which ruins cutting edges. All the teeth should be completely ground off before the steel is fit for use. The Railway Spring Blades are better stuff than much of the imported steel, but the form is unhandy. There is room for a profitable small industry in Bombay for the reduction of Files and Spring Plates to useful forms for artificers. The Files should be ground smooth, a process that can only be done with economy on a steam driven stone, and the Spring Plate should be rolled into cheap Saw Blades or divided by means of cutting rolls into suitable bars for the use of the small artificer. At the present time Spring Plates are actually hammered into Cross Cut Saws on the anvil and used by wood cutters, although the labor of working with such tools is greatly increased."

**PROGRESS BEING MADE.**—It is clear from the foregoing that a considerable education is still necessary before a large trade can be done in hand tools. The workman in India is already receiving some sort of an education in the railway workshops where his tools are found for him. And the young Indian men are showing a greater aptitude for the use of modern tools than many Anglo-Indians anticipated. It would seem, therefore, that if any American makers have got a stock of primitive tools which they would like to sell they might do worse than get into touch with some Hardware importers in Calcutta, Madras or Bombay.

Antrim Hardware Company, Bellaire, Mich., are erecting a large two-story building for their business. The lower floor will be devoted to salesroom purposes, and the upper floor to storage.

## Trade with South Africa.

**A**S conditions in South Africa become more settled commercial activity is likely to resume its usual course, and capital will be prompted to avail itself of the opportunities presented in that country which is being more and more opened up to trade.

**CAPE TO CAIRO RAILROAD.**—The projected Cape to Cairo Railroad, which is being urged by Cecil Rhodes, parts of which have long been operated, will accomplish something of the same results in a general way that our own transcontinental lines (the Union Pacific and Central Pacific railroads, completed in May, 1869), did for our own continent. Our single track line across the continent long since vindicated the prevision of its builders, and has already been supplemented by the building and operation of six or seven other distinct through transcontinental trunk lines, which have and are developing great property interests along the different routes. In a similar way the longitudinal road contemplated to connect Mediterranean Africa with the Cape, requiring now but about 3000 miles of road, as a connecting link joining systems at both extremes already in existence, will open to trade great tracts, some of which are partially developed, while others are entirely primeval.

**FIELD FOR AMERICAN GOODS.**—This is a field for American goods that our manufacturers should keep in mind. While the immediate demand is from developed sections settled by whites, such as Cape Colony, Orange Free State, Transvaal, Rhodesia and adjacent territory, supplies will naturally follow adventurous spirits into new country. For the immediate present there are three classes of business in South Africa to be considered:

**First**—Ordinary commercial business. Imports were small during the war just ending, and warehouses are completely empty of many classes of goods. This will result in large imports, and possibly in the near future may be overdone.

**Second**—The army business. The British army have been large consumers, and are likely to continue to be, as probably a considerable force will be required for some time to come.

**Third**—The reconstruction of railroads and opening of mines. This will very likely be for months the most active field of all, on account of the great destruction of railroad material and rolling stock. While the mines have not been severely damaged, many of them have been closed down and have thus suffered much.

#### American Hardware Shipped to South Africa.

The goods sent by this country to South Africa vary in character from Builders' and General Hardware, Tools, Farm Implements, Dairy Goods, &c., to provisions, flour, oils and numerous other goods, such as are sent to civilized countries. Scarcely anything is manufactured in South Africa, but some goods are assembled, the parts of which are made in other countries.

The representative of a large commission house in New York, who returned from South Africa last spring after a three years' residence in that country, spent among the merchants in trade centers, and who goes back next month, says the dealers like our Hardware and especially the way in which it is labeled, put up and packed. One South African buyer marveled at the quality and finish of the goods, together with the price they cost him, as he could dispose of them at a reasonable figure and still make a good profit. In the larger articles, Farm Implements of all kinds are bought, and in Carriages and Carts a large business is done, as well as in Pumping Engines and Mining Machinery, of which a prominent concern in this country are said to have orders aggregating \$600,000. There is also an excellent opportunity for a larger trade in furniture, much of which goes from here. Railway building will doubtless require large amounts of material, as well as rolling stock, and will stimulate trade in tools and miscellaneous articles.

More attention will also undoubtedly be given to irri-

gation, for which Ditching Tools are necessary, some sections being more or less subject to drought.

### An Important Business

with South Africa, so far as the United States is concerned, is in the exportation of manufactured wood for building purposes, such as doors, sash, window and door frames, balustrades, barge boards, and a general line of inside trim, together with Carriage and Wagon Wood Ware and Hardware. Much material for bullock wagons is also being exported from here, while the trade in lumber is likewise assuming satisfactory proportions.

To give some conception of the variety of goods sent to South Africa, we reproduce below a partial list of Hardware and allied goods sent there by a single New York commission house. Even this list does not include all the different goods they export to that country, which are of interest to readers of *The Iron Age*:

Adzes.  
Air Rifles.  
Augers, Cast Steel.  
Axes.  
Axle Grease.  
Axles.  
Bathtubs.  
Batteries, Blasting.  
Beaders.  
Beef Shavers.  
Bellows.  
Bells, Call, Door, &c.  
Belting.  
Bench Screws.  
Bevels.  
Beverage Mixers.  
Bicycles.  
Bird Cages.  
Bits, Auger.  
Bolt and Rivet Clippers.  
Bolts.  
Bone Cutters.  
Bone Mills.  
Braces.  
Brackets.  
Brushes, Paint, &c.  
Building Materials.  
Bush Hooks.  
Butter Dishes.  
Butts.  
Camp and Lawn Furniture.  
Cane Knives.  
Can Openers.  
Carpet Sweepers.  
Carriage Bolts.  
Carriages, Carts and Buggies.  
Carriage Springs.  
Carriage Tops and Cushions.  
Carriage Wood Ware.  
Cartridge Reloading Tools.  
Cartridges and Gun Wads.  
Casters, Bed and Plate.  
Cattle Dehorers.  
Chains.  
Chairs.  
Chair Seats.  
Chisels.  
Chucks.  
Churns.  
Clamps, Carriage Makers'.  
Clippers, Horse and Toilet.  
Clothes Bars.  
Clothes Mangles.  
Clothes Pins.  
Clothes Washers.  
Clothes Wringers.  
Coffee, Spice, Bone and Shell Mills.  
Cookers.  
Cooperage Stock.  
Cordage.  
Cork Pullers.  
Cork Screws.  
Corn and Bean Drills.  
Corn Shellers and Planters.  
Cow Bells.  
Curry Combs.  
Cut Nails.  
Dairy Machinery.  
Dividers.  
Door Bells, Pulls and Buttons.  
Door Chains, Bolts and Latches.  
Door Hangers, Checks and Springs.  
Drills and Reamers.  
Drills, Fertilizer.  
Drug Mills.  
Drying Bars.  
Emery Wheels.  
Faucets.  
Files.  
Fire Arms.  
Fire Extinguishers.  
Forges.  
Forks, Rakes, &c.  
Fruit Jars.  
Fuses, Electric.  
Gauges.  
Graphite.  
Grindstone Fixtures.  
Grindstones.  
Grub Hoes.  
Guns.  
Hack Saw Frames.  
Halters.  
Hammers and Sledges.  
Hand Carts.  
Handles.  
Hand Mills.  
Hangers and Rollers.  
Hardware Specialties.  
Harness and Saddlery.  
Harrows.  
Hatchets.  
Hay Cutters.  
Hinges.  
Hoes.  
Hooks, Hat and Coat, &c.  
Horse Nails.  
Hose.  
Ice Shaves and Grips.  
Incubators.  
Irons, Laundry, Sad, &c.  
Lamp Goods, Chimneys, &c.  
Lanterns.  
Latches and Locks.  
Lath.  
Lawn Mowers.  
Lawn Swings.  
Lemon Squeezers.  
Levels.  
Locks.  
Mallets.  
Mangles.  
Mattocks.  
Measuring Tapes.  
Meat Choppers and Cutters.  
Meat Cutters and Stuffers.  
Milk Shakers.  
Mills.  
Mouse Traps.  
Nails.  
Nippers.  
Oakum.  
Oil Stones.  
Packing.  
Padlocks.  
Paper Box Machinery.  
Picks.  
Pistols, Guns and Rifles.  
Planes.  
Pliers.  
Plows and Parts.  
Plumbs and Levels.  
Polish and Buffing Composition.  
Potato Cutters and Planters.  
Potato Hooks.  
Poultry Racks.  
Presses, Fruit, Wine, Jelly and Tincture.  
Pulleys.  
Pumps and Rams.  
Rakes.  
Rams, Hydraulic.  
Rat Traps.  
Refrigerators.  
Revolvers.  
Rivets and Riveters.  
Rope.  
Rosin.  
Rubber Goods.  
Rules.  
Ruling Machines.  
Saddlery Hardware.

Sad Irons.  
Sash Cord.  
Sashes, Window.  
Sausage Stuffers.  
Saws.  
Scales.  
School Slates.  
Scissors and Shears.  
Screw Drivers.  
Scythe Stones.  
Shovels and Spades.  
Slate, Roofing.  
Sluice Forks.  
Smoother Irons.  
Snaps, Covered Spring.  
Spading Forks.  
Speed Indicators.  
Spike Shaves.  
Sprayers and Flower Atomizers.  
Spring Balances.  
Squares.  
Squares, Patent Combination.  
Stable Supplies.  
Staves and Hoops.  
Steelyards.  
Stencils.

Store Trucks.  
Stoves and Ranges.  
Tacks.  
Tin Smiths' Tools.  
Tool Cutters and Grinders.  
Tool Sets.  
Towel Racks.  
Transom Lifters.  
Traps, Rat and Mouse.  
Try Squares.  
Twist Drills.  
Vises.  
Wagons and Carts.  
Washboards.  
Washing Machines.  
Wheelbarrows.  
Wheels, Cart and Carriage.  
Wheels, Well.  
Whetstones.  
Whips.  
Whitewashing and Coating Machines.  
Wind Mills.  
Wooden Ware.  
Wood Working Machinery.  
Wrenches.  
Wringers.

### Bookkeeping for Retail Stores.

A BOOK by W. F. Dean, under the above title, embodies a system of bookkeeping for retail stores. The object of the book is to enable merchants with a comparatively small business to have a good bookkeeping system. Illustrations showing various forms used in the system are interspersed throughout the book. In developing the system the author explains that the following objects have been kept in view:

To obtain with the least possible labor and in a convenient form for reference an accurate record of customers' accounts;

To show the amount of sales in each different department or division of the business;

To show the total amount sold by each salesman, as a guide to the efficiency of employees;

To provide a convenient means of arranging accounts payable, so as to take advantage of cash discounts as far as possible;

To subdivide purchases in the same manner as sales, and to show by the balance in each subdivision of merchandise account in the general ledger the stock on hand and approximate profits from week to week, or from month to month;

To so arrange the cash book as to provide for the distribution and summing up of expense items, so that these may be carefully watched.

The desirability of some form of bookkeeping from which a balance sheet may be taken readily at any time is emphasized, as it is pointed out that only by the study and analysis of such a balance sheet, together with records showing the results of operations from day to day, can an accurate knowledge of the condition and progress of the business be obtained. The price of the book is \$1. Copies may be obtained from R. K. Dean, Seymour, Conn.

### Fletcher Hardware Company's Catalogue.

THE FLETCHER HARDWARE COMPANY, Detroit, Mich., have issued a 1264-page catalogue, bound in cloth and leather, containing illustrations, descriptions and list prices of Hardware and a partial line of the Sporting Goods carried by them. Full page views are given near the front of the book of the company's main warehouse, office and salesrooms; their storage warehouse, also of their receiving and shipping dock, for all points on the Great Lakes. These views are followed by a department index showing the classification of goods in 15 departments. An alphabetically arranged index of 63 pages facilitates reference to any goods. The lines embraced cover a large variety of Hardware, Pumps, Sporting Goods, Tanners' Supplies, Tin and Hollow Ware, House Furnishing Goods, &c. The catalogue is well printed on a fine quality of paper, substantially bound and copiously illustrated. The company are to be congratulated upon the production of such a book, and their customers will, no doubt, thoroughly appreciate its value.

The Hardware store of Richey & Son, Palestine, Ill., was recently destroyed by fire, with a loss of about \$10,000. The firm saved all the goods on first floor, and have moved into their Farm Implement room until the Hardware store is rebuilt. The new store will be fitted with Warren cabinets.



## Trade Winning Methods.

*This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.*

*A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### G. B. CHURCHILL COMPANY'S

#### ADVERTISING METHODS.

For 18 years the store front of G. B. Churchill Company of Galesburg, Ill., has been painted yellow. During all this time an owl has stood above the entrance carrying a sign upon which are the words, "We Never Sleep." An illustration of this vigilant bird is given in Fig. 1. On each side of the door is a large curved



Fig. 1.—The Owl.

glass window, as shown in Figs. 2 and 3. These features of the store have been adopted for advertising effect, and very successfully we are advised.

#### An Outlined Owl.

The owl has been the firm's trade-mark ever since they started in business, and they have recently had an outline of an owl painted upon each window, as shown in Fig. 3. This has attracted a great deal of attention, and has been pronounced a great advertising scheme by many who have seen it.

### The "Owl Store" Known

To ascertain how well the "owl store" was known, a number of letters were sent to persons within a distance of 100 miles of Galesburg, each inclosing an en-



Fig 3.—Owl Outlined on Windows.

velope with nothing on but a row of little owls, and addressed to Galesburg. Each person was requested to write a letter and inclose it in the envelope. All the letters were delivered to the company. A second lot of eight letters were then sent out, inclosing envelopes



Fig. 2.—Store Front.

with only an owl on—no name or address—and five of these reached the company. This showed that the postmasters of the towns in which the return envelopes were mailed knew for whom they were intended.

#### Newspaper Advertising.

The widespread knowledge of the concern has been gained principally from advertisements which have appeared in all the daily and weekly papers published in the county. The ads. vary from 10 to 40 square inches in size, and are changed each issue. Owls figure largely in the advertisements, in all positions, often illustrating the use of the articles advertised. The company also have hundreds of different patterns of owl borders which are used in advertisements. An idea of how the owls are used may be obtained from the reduced reproduction of the firm's advertising scrap book, Fig. 4, and also from Fig. 5.

#### Catch Phrases.

Every advertisement has some striking catch phrase, as, for example, in Fig. 5. Following are a few of the catch phrases employed:

*We never sleep.*

*Curved glass with owl over the door.*

*The front turns in and so do the people.*

*Original yellow front.*

*Follow the curve in the glass to the G. B. Churchill Co.*

*The yellow front, the curved glass and everlasting hustle.*

*The yellow hustlers.*

*Owl right Hardware dealers.*

*Hardware hustlers with yellow front.*

*The yellow Hardware hustlers with the curved owl front.*

*See the hump? It's the curve in the glass.*

*See the hustle? It's the way we do biz.*

*Tireless toilers for trade.*

*Hungry Hardware hustlers.*

*Watch for the owl on the window.*

*Sleep? Never!*

*The owl's on the jump at the Yellow Front.*

*Where the curve is in the glass, the bustle is in the store and the front is painted yellow, there the trade is more and more.*

*See that hump? It's in the glass. See that hustle? It's in the store.*

#### Owls and Jingles.

Many pictures of owls were obtained by advertising for them in the newspapers. Jingles were also obtained



Fig. 4 — Advertising Scrap Book.

in the same way. The invitation to the public was expressed in this manner:

*Jingles and Birds! Jingles and Birds!*

*Draw us the pictures, and write us the words.*

Fifteen dollars in gold was offered for the best production and Pocket Knives for the ten next best. As a result over 100 "owls and jingles" and pictures were received.

Among these was one written by a boy 12 years old with a picture of an owl sweeping with a sweeper, and a verse as follows:

*"An owl had a broom, and she used to say  
That it made more dust than it swept away,  
So she went to the "owl store" the very next day,  
Bought a sweeper and paid the price.  
And after that her rooms looked nice."*

Another one was the picture of an owl with a stick in his hand pointing to Galesburg upon the map of the United States. The verse was as follows:

*"An owl with a pretty wise head,  
Came to Galesburg and stayed.  
For there is not a town  
In the whole country around,  
Where they sell things like Churchi'l, he said."*

Another contribution was a picture of an owl sitting in a hammock with his arm around a lady owl. The verse was as follows:

*"An owl whose heart was affected,  
But who had been by his lady rejected,  
Bought a hammock so fine  
From the Yellow Front line,  
And immediately a change was affected."*

These examples serve to show the excellent advertising matter thus obtained.

#### A Booklet.

The daily papers of the town publish each night a list of all the marriage licenses granted in the county during the day. For the newly married couples each day, as the names are obtained, the firm have prepared an attractive little booklet which is mailed to them. The



Fig. 5 — Catch Phrases.

book shows lines of Cooking and Heating Stoves, House Furnishing Goods, Kitchen Utensils, and other Hardware articles.

#### Owl Cards.

Another advertising scheme of the firm was the issuing of a limited number of owl business cards. The owls used in these cards were made by a Mexican feather worker. The owl and the yellow colored base upon which it stood occupied one corner of an engraved card. The bird was made of feathers, had glass eyes, and was an excellent representation in color and design of an owl. As the cards were expensive, but a limited number were ordered, and were given to only such people as it was thought would be likely to carry them about and show them. It proved a very effective advertisement, and it is estimated that each card given away has been seen by 25 people, upon the minds of whom the owl store was strongly impressed.

#### Scrap Books for Advertisements.

In Fig. 4 is shown a reduced reproduction of an advertising scrap book, of which the company have sev-



eral. These contains ads. which have been used at one time or another. A copy is saved of every advertisement and every circular they get out. A great deal of satisfaction is not only afforded in looking over the books, but it enables an improvement to be made each year upon the advertisements of the year previous. Another scrap book contains copies of advertisements of other firms which are considered especially good. By comparing their own advertisements for the past three or four years and then looking through the advertisements of other houses many valuable ideas are obtained which are suggestive in writing new ads.

#### Window Display.

Newspaper advertising, circulars, &c., are supplemented by show window display, to which much attention is devoted. The display is changed every week. Instead of putting a number of different kinds of goods in the windows, the best results are obtained by filling each window with one kind of goods. The windows are not well arranged for display work, not being deep, because of lack of room, but a number of backgrounds are utilized at different times. The manner in which

tained from five batteries, which are renewed twice a day, which is but a few minutes' work.

A small motor is used in some of the window displays. It is hardly necessary to add that this firm believe that advertising pays the Hardware merchant as well as those in other lines of business. They have demonstrated it to their own satisfaction.

#### Price-Lists, Circulars, &c.

MCKENNA BROS. BRASS COMPANY, Pittsburgh, Pa.: Special catalogue relating to Hot Water Urns, Furnaces, Keystone Copper Polish, &c.

A. TREDWAY & SONS HARDWARE COMPANY, Dubuque, Iowa: Catalogue No. 28 of fall and winter goods. The book contains 64 pages, and shows a variety of lines.

J. E. RHOADES & SONS, Philadelphia, Pa.: Attractively printed catalogue devoted to their line of Belting, Rubber Goods, &c.

THE GOODWIN & KINTZ COMPANY, Winsted, Conn.: Circulars illustrating an attractive line of Decorated Porcelain Vases and Clocks, Mirror Plateau, Candelabra and Chafing Dishes, with aluminum cooking pans.

GOODELL COMPANY, Antrim, N. H.: Catalogue A, of 70 pages, devoted to their extensive line of Knives and

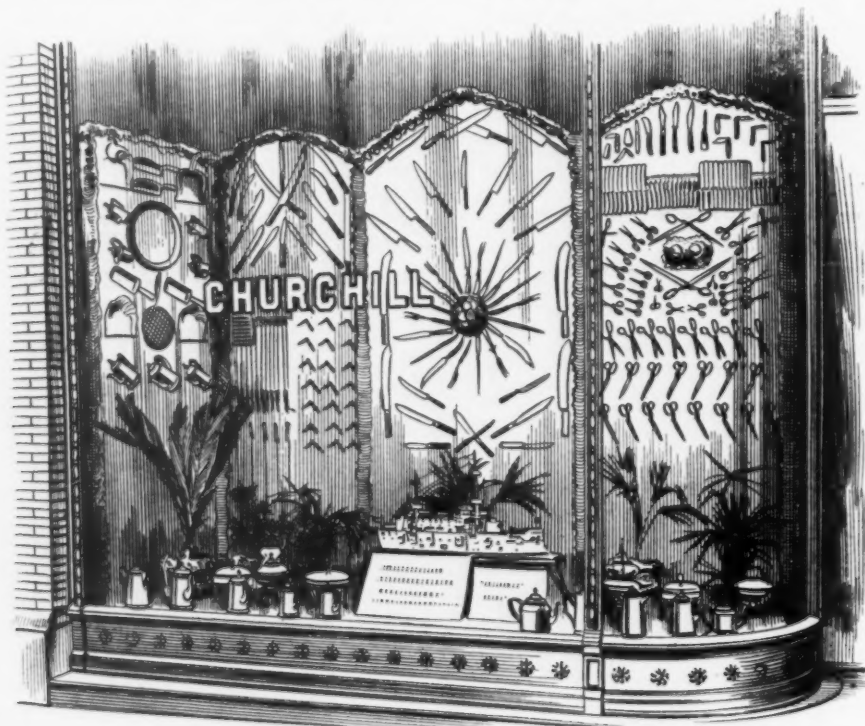


Fig. 6.—A Show Window Display.

the windows are arranged is illustrated in Figs. 2, 3 and 6.

One week, for instance, a window will be filled with Mixed Paints, Brushes, Colors, Varnishes, &c. The following week a line of Gasoline Stoves will be shown, and the next week Refrigerators, while at another time a display of fine Cutlery will be made.

#### Mechanical Appliances.

The company have a number of mechanical appliances that have attracted considerable attention. One is a black cat sitting on its hind legs holding a black and white kitten in its arms, and feeding same with a bottle through a nipple. The head of the cat moves mechanically, its eyes open and shut, being an imitation of a cat rocking a little kitten to sleep. Another is a mechanical bear, that growls, opens and shuts its mouth, turns its head, and keeps time with a long stick. Another appliance is a picture of Uncle Sam with flag in hand, saying: "This flag must be respected." The eyes move from one side to the other.

Another attraction was a train of small electric cars running on a circular track. The locomotive is complete with tender, flat car and box car. Power is ob-

Forks, Carvers, Butcher Knives and Steels, Hunting Knives, Butter and Cheese Knives, Butter Spades, Bread Knives, Putty and Scraping Knives, Cigar Knives, Kitchen Knives, Broom Corn Knives, Shoe Knives, Can Openers, &c.

WATERBURY MFG. COMPANY, Waterbury, Conn.: Catalogue of Plumbers' Supplies, illustrating Flanges, Chain Stays, Chain Pull, Plugs and Collars, Plumbers' Screws, Strainers, Clamps, Ferrules, &c.

#### Trade Items.

THE INDIANA EDGE TOOL COMPANY, Gas City, Ind., who have been outside the combination, have discontinued the manufacture of Scythes, having made an arrangement to this end with the associated manufacturers. They continue the manufacture of their other goods, including Hedge Knives, Corn Knives, Corn Hooks, Grass Hooks, Hay Knives, &c.

Those having factory buildings to sell suitable for manufacturing machinery will be interested in the Special Notice on another page, signed W. W. Gibbs. A plant embracing foundry is preferred.

THE BATEMAN MFG. COMPANY, Grenloch, N. J., manufacturers of the well-known Iron Age Farm and Garden Implements, in their catalogue for the 1901 season will offer to the trade several new Tools with important features.

## A Thanksgiving Display.

The accompanying illustration represents a turkey used as part of a window display last Thanksgiving by J. M. Davis & Son of Oakland, Md. The turkey was made by sawing an inch board as nearly the shape as possible. The body was perfected by tacking black calico on each side of the board, and stuffing it with excelsior to give it shape. Small sized Brackets were used for legs, and also served to fasten the turkey to the top of a box. After sawing out the head it was finished by a painter who used red and black paint, with white for the eyes, thus giving it a very bold appearance. The



*A Thanksgiving Display.*

body was trimmed with small Hardware, while Butcher and Table Knives were fastened on the board used for the tail. The turkey was placed on a box in the center of a large double window a few days before Thanksgiving, overlooking a table 12 inches high, which was covered with linen. On the table was displayed a handsome set of Dishes taken from stock, neatly arranged with fancy cut Goblets, paper napkins, silver Knives and Forks, &c. The larger Dishes were filled with such fruits as apples, oranges, cranberries, &c., making a very inviting display. Just above the turkey, in large red letters, were the words, "War on Turkey." The upper part of the window and backgrounds were tastefully

trimmed with wreaths and festoons, made of running vines and pine tree branches, in keeping with the season of the year.

Lyons Hardware Company, Lyons, Ohio, have moved their stock of Hardware, Stoves, Tinware, Paints and Oils, &c., into the Eynen and Lehr block. This new

building stands on the same site as the one that was burned down last spring, but is a more attractive and better built structure. The main room is shelved from floor to ceiling, one side being filled with shelf boxes. Rolling ladders are employed. The firm occupy two stories, the upper floor being at present devoted to store room and tin shop purposes, but it is their intention in the near future to have warehouse and tin shop built at rear of store and use upper story for a line of furniture. E. E. Milliken, manager of the business, has lately been elected Mayor of the city.

## Miscellaneous Notes.

### New White Light Gas Lamps.

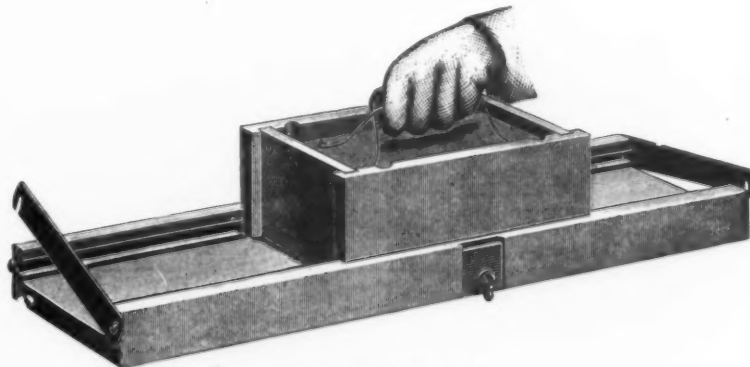
The New White Light Gas Lamp Company have placed on the market a line of lamps for burning gasoline, using incandescent mantles, which covers a variety suitable for all purposes. These lamps comprise single burner pendent lamps, double burner chandeliers, three-burner chandeliers, four-burner chandeliers, library or student lamps, and indoor and outdoor arc lamps. The ordinary single-burner lamps are rated at 100 candle power, the indoor arc lamps at 500 candle power and the outdoor arc lamps at 750 candle power. The lamps are made in different styles and varying methods of generation are employed, according to the use. In some cases the generator is placed over the flame and in others under it. Some of the lamps have the reservoir overhead, feeding the supply of gasoline to the burner by gravity, while others are operated under air pressure, a pump being used to force air into the reservoir. The New White Light gas lamps have been examined and passed upon favorably by the Underwriters' Bureau of Fire Protection and Engineering of Chicago. The company have issued a beautifully illustrated catalogue, giving full descriptions of the different kinds of lamps manufactured, and also giving a description of the Monarch gas machine, which is used for the manufacture of gas for incandescent lighting. L. M. Richardson, 152 to 158 Lake street, is general sales agent for the company's product.

### Socket Wrenches and Lathe Dogs.

Samuel Harris & Co., who are large dealers in tools and supplies of all kinds for machinists and manufacturers at 23 and 25 South Clinton street, Chicago, are also manufacturers of some specialties in which they are building up a large trade. Among these specialties are a large line of socket wrenches for square head bolts. These are made of malleable iron and the line covers 12 sizes, ranging from a 1/4-inch hole to a 1 3/8-inch hole. The firm also manufacture improved lathe dogs with two screws. These dogs are made for hard service, being very strong, but as light as possible consistent with strength. They have hardened cast steel screws.

### The Queen Vegetable Slicer.

The cut shown herewith is of a vegetable slicer offered by E. C. Atkins & Co., Indianapolis, Ind. The knife of the slicer is double edged, cutting both ways. It can be removed for sharpening and is adjustable for cutting thick or thin slices. While the device slices cabbage for kraut or slaw without holding the cabbage in



*The Queen Vegetable Slicer.*

the hand, it is explained that it will also slice potatoes, onions, green tomatoes, turnips, apples, pumpkins and all other solid vegetables. Among other points of excellence the manufacturers state that it is impossible to cut the hand when using the slicer; that vegetables are all evenly sliced, leaving none in the slicer unsliced, and that it will slice one or a quantity of the above mentioned small vegetables at a time.



### Yankee Screw Drivers Nos. 11 and 60.

The accompanying cuts represent two screw drivers offered by North Bros. Mfg. Company, Philadelphia, Pa. The screw driver shown in Fig. 1 is an improvement on the company's No. 10 ratchet screw driver, the adjustment being across instead of in line with the length of blade, thus obviating, it is explained, any possibility of changing the position of the shifter while in use. The

not to mash, tear, squeeze or grind, but chop in pieces of uniform size, fine, coarse or medium, as desired, one of the cutters being suitable for pulverizing. The broad assertion is made by the manufacturers that there is not an article of food a housekeeper wants to chop that cannot be chopped with this implement. Some of the different things that can be chopped are raw and cooked meats, all kinds of vegetables and fruit, bread, crackers, cheese, nuts and other materials used in the preparation

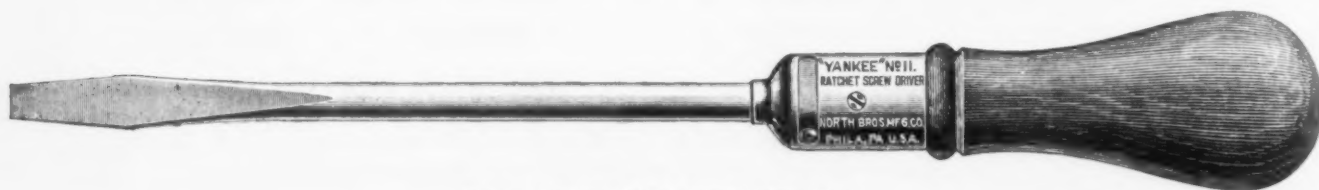


Fig. 1.—Yankee Ratchet Screw Driver No. 11.

ratchet mechanism has been modified to take less room, with consequent slight saving in the size and weight of the tool, and to work with less friction than the No. 10. The adjustment for right or left hand is made by pushing the shifter to left or right hand end of the slot. When the shifter is placed midway the blade is held rigid as in an ordinary screw driver. The manufacturers state that the materials and workmanship of the screw driver are of superior quality in every detail, and that the tool is strong, durable, well finished and thoroughly tested before leaving the factory. The screw drivers are made in eight sizes, from 2 to 12 inches inclusive. The pocket magazine screw driver shown in Fig. 2 is made of steel polished and nickel plated, weighing 2 ounces. The tool

of substantial dishes and dainty desserts. The chopper is made in three sizes, numbered 20, 22 and 24, the first being generally used for family purposes. No. 22 stands

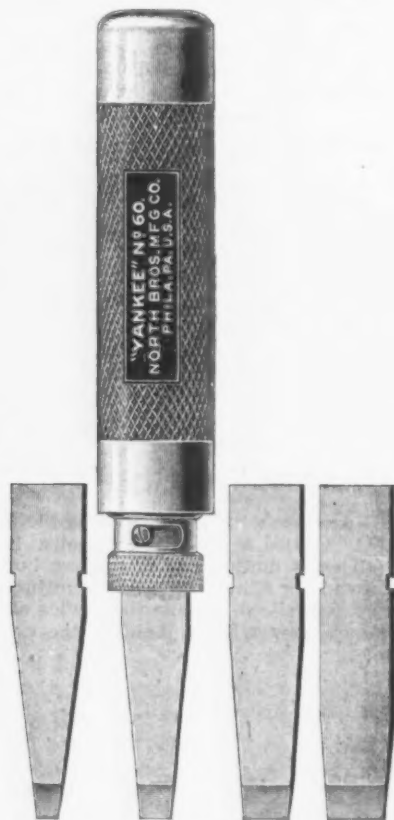


Fig. 2.—Yankee Pocket Magazine Screw Driver No. 60.

is convenient to carry in the pocket, measuring when closed 3 inches in length and  $\frac{5}{8}$  inch in diameter. It is provided with four detachable blades of varying widths and thicknesses to suit different size screws. The blades are kept in the magazine formed by the handle.

### Gem Food Chopper.

Sargent & Co., 149-153 Leonard street, New York, are manufacturing the Gem food chopper, here illustrated. The chopper is offered as a practical kitchen utensil for daily use, with no complicated mechanism to get out of order. It can be quickly taken apart and as easily cleaned. There are no knives to sharpen, the arrangement of the four steel cutters in Figs. 2 to 5 being such that they sharpen themselves. Especial attention is called by the makers to the steel cutters, which are said



Fig. 1.—Gem Food Chopper.

higher from the table and has a large hopper, while No. 24 is extra large and heavy. Nos. 22 and 24 are so made that a sausage stuffer can be attached. The cutter shown in Fig. 2 is suitable for making sausages and for pul-

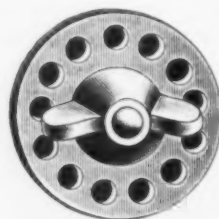


Fig. 2.—Cutter No. 1.

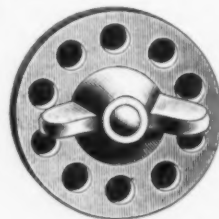


Fig. 3.—Cutter No. 2.

verizing crackers, dried bread, spices, chocolate, coconuts, figs, raisins, &c. The cutter in Fig. 3 is designed for chopping meat, crackers and bread or similar food when required in small pieces. The third cutter is in-

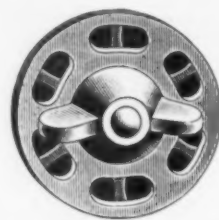


Fig. 4.—Cutter No. 3.

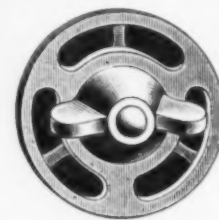


Fig. 5.—Cutter No. 4.

tended for chopping meat, vegetables, fruit, salads and all kinds of food. Fig. 5 represents the cutter suitable for chopping salt pork, suet, fish, cooked meats and all kinds of fresh and dried fruits, also any food not required in very small pieces. The company issue a display

hanger 14 x 12 inches for dealers, and have also prepared a series of 16 advertisements of various dimensions for trade, newspaper and magazine advertising, which are electrotyped plates, to be had on application gratis.

### The Bolton Bread Crumb Crusher.

The accompanying cut represents a bread crumb crusher offered by Ogden Bolton, Jr., Canton, Ohio. It is made of galvanized iron, with holes so it may be screwed to the wall of the kitchen. The crusher is designed for crushing dried bread to crumbs for use in cooking breaded veal cutlets, oysters, fish, croquettes, &c., in



The Bolton Bread Crumb Crusher.

families. The bread is placed in the wedge shaped receptacle, which is then worked by the handle, crushing the bread rapidly to crumbs. It is pointed out that being attached to the wall, the crusher is not in the way and is always ready for use; also that it is not necessary to crush up a large quantity of bread at a time, a few pieces being crushed as required.

### Improvements in Rules.

The accompanying cuts represent improvements in brass bound rules which have been adopted on all bound and half bound rules manufactured by the H. Chapin's

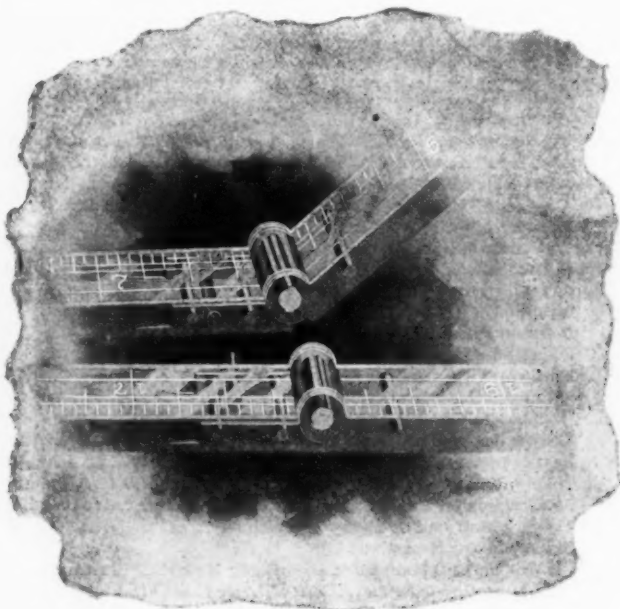


Fig 1.—Improved End Joints.

Son Company, Pine Meadow, Conn. The binding of the rules comes up full width and strength to the head, which allows the joint plates to fit in between, as in Fig. 1, this arrangement permitting the binding pin to be placed near the head, making, it is remarked, a perfect and strong joint. In Fig. 2 the method of concealing the binding pin at the middle joint is shown, which, it is explained, strengthens the rule at this point and adds

to its appearance. The improvements, it is stated, add no extra cost to the rules. In Fig. 3 is shown a combination rule and glass cutter, which the company are putting on

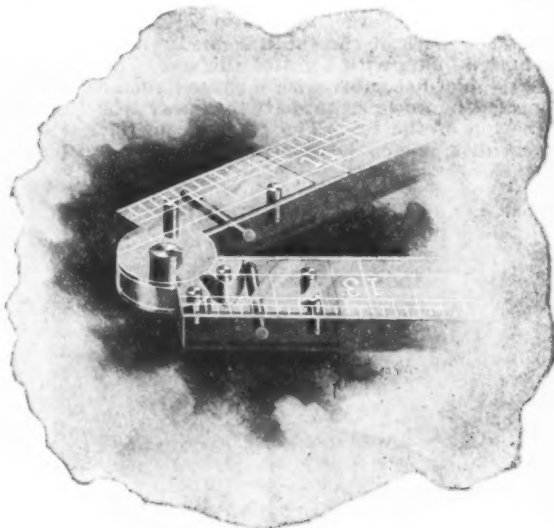


Fig 2.—Improved Middle Joint.

the market. The cutter wheel is made of fine hardened steel so as to be serviceable, and the rule is supplied with a glass breaker in the head. Another good, simple

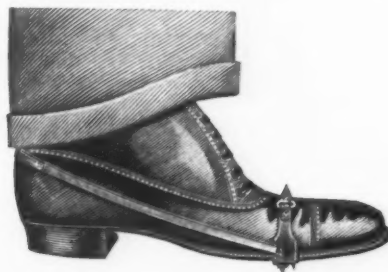


Fig. 3.—Combination Rule and Glass Cutter.

way to break the glass, it is explained, is to slip it between the middle joints of the rule when closed and firmly held in the hand.

### Alaska Ice Creeper.

Blair Husking Glove Company, Bucyrus, Ohio, are putting on the market the ice creeper herewith illustrated. The strap over the toe is adjusted tightly to the foot by a buckle. The strap around the heel is made of



Alaska Ice Creeper.

leather, with a short piece of elastic for adjustment. The spikes under the sole are made of hard steel. The manufacturers explain that the creeper can be put on in an instant over a shoe, boot or overshoe. The creeper is made in No. 100 for men and No. 98 for women.



### The Gee Potato Parer.

Charles E. Gee, 148 Fletcher street, Lowell, Mass., is placing on the market the potato parer illustrated herewith. The sides of the tub are lined with a perforated galvanized lining with a grated surface. The bottom has a removable disk, also with a grated surface, which is connected by an upright shaft to a gear wheel attached to the top of the tub. The potatoes are placed on the bottom disk, which is revolved, throwing the potatoes

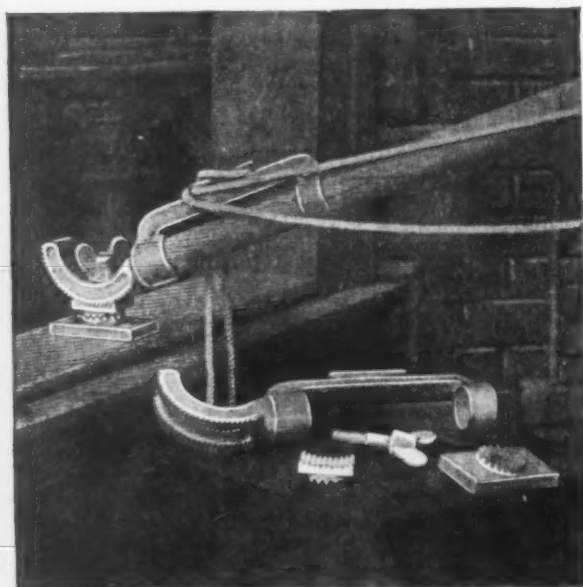


The Gee Potato Parer.

against the grated sides, removing the skins, which are washed out through the opening in the bottom of the tub. The parer can also be used for apples, turnips, &c. A patent has been applied for. The parer is designed for use in hotels, restaurants, boarding houses, &c.

### Ineeda Flag Bracket.

The accompanying cut shows a bracket for flag poles being introduced by Wilcox, Crittenden & Co., Middletown, Conn. In referring to the bracket the manufac-



Ineeda Flag Bracket.

turers remark that it has few parts, that by the use of one thumb screw it can be set to nearly 400 different angles, and that only one small casting remains on the window sill when detached. The bracket is provided with a cleat for the flag halyard. The brackets are now

made for poles 1¼ and 1½ inch diameter, and patterns for 1¾ and 2 inch poles are in course of preparation.

E. E. Seep and A. F. Seep, under the style of Seep Bros., have succeeded J. M. Carson in the Hardware, Stove, House Furnishing Goods, Bar Iron and Steel and Wagon Makers' Supply business in Oil City, Pa. They have also acquired his tin shop, but Mr. Carson will continue in the Plumbing line himself. The new firm will overhaul the store and add a good deal of new stock.

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# Current Hardware Prices.

REVISED OCTOBER 23, 1900.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Cut Prices.**—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3, 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic, per doz. \$3.00...33¢@33¢10¢  
North's...10¢  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent...25¢5¢  
Taplin's Perfection...30¢

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvils...\$ 7 1/4@7 3/4  
Hay-Budden, Wrought...9 1/4@9 3/4  
Horseshoe brand, Wrought...9 1/4@9 3/4  
Samson...7 1/4@7 3/4  
Trenton, Wrought...8 1/4@8 3/4  
Huel Pat. Trenton Wrought...8 1/4@8 3/4  
Vulcan Wrought...8 1/4@8 3/4

## Imported—

Armitage's Mouse Hole...\$ 6 1/4@6 1/4  
Peter Wright's...\$ 6 1/4@6 1/4

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00...20¢

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Hull & Hoyt Co.:  
Lots of 1 doz...25¢  
Sma. of Lots...30¢  
Lots of 3 doz...30¢

## Augers and Bits—

Com. Double Spur...60¢10¢10¢70¢5¢  
Boring Machine Augers...60¢10¢10¢70¢5¢

Car Bits, 12-in. twist...60¢@.5¢  
Jennings' Pattern...60¢@.5¢

Auger Bits...60¢@.5¢  
Ford's Auger and Car Bits...40¢10¢40¢10¢10¢

Forester Pat. Auger Bits...25¢  
C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list...40¢  
No. 30, R. Jennings' list...60¢

Russell Jennings...25¢10¢25¢  
L'Hommiedieu Car Bits 15¢10¢15¢10¢5¢  
Pugh's Black...20¢  
Pugh's Jennings' Pattern...35¢

Snell's Auger Bits...60¢  
Snell's Bell Hanger Bits...60¢  
Snell's Car Bits, 12-in. twist...60¢  
Wright's Jennings Bits (R. Jennings' list)...50¢

## Bit Stock Drills—

Standard list...65¢@.5¢

## Expansive Bits—

Clark's small, \$18; large, \$20...50¢10¢  
Lavigne's Clark's Pattern, No. 1, per doz., \$26; No. 2, \$18...50¢10¢  
C. E. Jennings & Co., Steer's Pat...35¢  
Swan's...60¢

## Gimlet Bits—

Common Double Cut, gro. \$2.00@2.75  
German Pattern...gro. \$3.25@5.00  
Double Cut, makers' lists...50¢5¢50¢10¢

## Hollow Augers—

Ames...35¢10¢  
Bonney's Adjustable, per doz...\$16.00  
New Patent...35¢10¢  
Universal...20¢

## Ship Augers and Bits—

Ford's...40¢  
Seel's...40¢  
C. E. Jennings & Co.:  
L'Hommiedieu's...15¢10¢  
Watrous's...40¢

## Awl Hafts, See Hafts, Awl.

## Awls—

Brad Awls:  
Handled...gro. \$2.75@3.10  
Unhandl'd, Shouldered, gro. \$3.25@3.50  
Unhandl'd, Patent...gro. \$6.00@7.00

Peg Awls:  
Unhandl'd, Patent...gro. \$1.00@1.50  
Unhandl'd, Shouldered, gro. \$5.00@7.00

Scratch Awls:  
Handled, Common, gro. \$3.50@4.00  
Handled, Socket, gro. \$11.50@12.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First Quality, best brands...\$6.25@6.50  
First Quality, other brands...\$6.00@6.25  
Jobbers' Special Brands:  
Good Quality...\$5.00@5.50  
Best Quality...\$6.25

Cheap, Handled Axes...\$5.50@5.75  
Beveled add 5¢ doz.

## Axle Grease—See Grease, Axle.

## Axles—

Concord, Loose Collar...6¢  
Concord, Solid Collar...5¢  
No. 1 Common...3¢@3 1/2¢  
No. 1 1/2 Com. New Style...3 1/2¢@5¢  
No. 2, Solid Collar...3 1/2¢@5¢  
Nos. 7, 8, 11 to 14...75¢10¢5¢  
Nos. 15 to 18...60¢10¢  
Nos. 19 to 22...75¢80¢

Iron or Steel.  
\$2 cash 10 days.

## Boxes, Axle—

Common and Concord, not turned...lb. 5¢  
Common and Concord, turned...lb. 6¢  
Half Patent...lb. 9¢

## Balances—

Caldwell new list...50¢  
Poulman's...60¢

## Spring Balances—

Chatillon's Light Spg. Balances...40¢10¢  
Chatillon Straight Balances...40¢  
Chatillon Circular Balances...50¢  
Chatillon's Large Dial...30¢  
Palmaze...50¢

## Barb Wire—See Wire, Barb.

## Bars—Crown—

Steel Crowbars, 10 to 40 lb., per lb...\$2 1/4¢

## Beams, Scale—

Scale Beams, List Jan. 12, '83...50¢30¢5¢  
Chatillon's No. 1...30¢  
Chatillon's No. 2...40¢

## Beaters—Egg—

Standard Co.:  
No. 5 Steel Handle Dover, per gro. \$6.50  
No. 10 Cast Handle Dover, per gro. \$8.00  
No. 10 Steel Handle Dover, per gro. \$8.00  
No. 15 Extra Heavy Steel Handle, per gro. \$15.00

Rival, per gro...\$10.00  
Taplin Mfg. Co.:  
No. 50 Small Family size...\$3.50  
No. 100 Regular Family size...\$8.00  
No. 102 Regular Family size, tinned...\$9.50  
No. 150 Large Family size...\$15.00  
No. 152 Large Family size, tinned...\$17.00

Lyon's, Standard size...per doz. \$17.50  
Wooler (S. S. & Co.)...per doz. \$7.50

## Bellows—

Blacksmith, Standard List 70¢70¢5¢  
C. E. Jennings & Co., Blacksmith...60¢10¢  
C. E. Jennings & Co., Hand...35¢

## Blacksmiths—

Inch...30 32 34 36 38 40  
Each...\$3.70 3.95 4.25 4.50 4.75 5.00

Extra Length:  
Each...\$4.25 4.50 4.75 5.00 5.25 5.50 5.75 6.00

Inch...9 10 11 12 14 16  
Doz...\$6.75 7.25 8.50 9.50 12.00 15.50

## Hand—

Inch...6 7 8 9 10 12  
Doz...\$3.75 4.25 4.50 5.00 5.75 6.75

## Bells—Cow—

Ordinary goods...75¢10¢  
High grade...70¢70¢10¢  
Jersey...75¢75¢10¢  
Texas Star...50¢10¢

## Door—

Abbe's Gong...45¢  
Barton Gong...50¢  
Gong, Yankee...55¢  
Home, R. & E. Mfg. Co.'s...50¢10¢  
Lever and Pull, Sargent's...20¢10¢10¢

## Hand—

Hand Bells, Polished...60¢60¢10¢  
White Metal...55¢55¢10¢  
Nickel Plated...50¢50¢10¢  
Swiss...50¢10¢60¢  
Silver Chime...35¢35¢10¢

## Miscellaneous—

Farm Bells...lb. \$2 1/2¢  
Steel Alloy Church and School...60¢10¢5¢  
Wilnot & Hobbs Mfg. Co., Gongs...70¢

## Beltng Rubber—

Common Standard...70¢10¢7 1/2¢  
Standard...60¢10¢7 1/2¢  
Extra...60¢60¢10¢  
High Grade...60¢60¢10¢

## Leather—

Extra Heavy, Short Lap...50¢10¢60¢

Regular Short Lap 60¢10¢60¢10¢5¢  
Standard...60¢10¢10¢70¢5¢  
Light Standard...70¢70¢5¢

## Cotton—

Rosendale-Reddaway R. & H. Co.:  
Spitex Brand...60¢10¢  
Durable Brand...70¢

## Bench Stops—See Stops, Bench

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters...30¢  
Stoddard's Lightning Tire Upsetters...40¢50¢

## Bicycle Goods—

John S. Lang's Son's 1899 list:  
Chain...50¢  
Parts...50¢  
Spokes...50¢  
Tubes...60¢

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—  
See Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks—Tackle—

Common Wooden...70¢70¢10¢  
Cleveland Steel...50¢10¢60¢10¢  
Eddy's Steel...60¢10¢  
Harris Steel...50¢10¢  
Ford's Star Brand Self Lubricating...60¢10¢

Hollow Steel, Ford's Pat. Star Brand...50¢10¢  
Lane's Patent Automatic Lock and Junior...30¢  
Stowell's Novelty, Mat. Iron...50¢  
See also Machinery, Hoisting.

## Beards, Stove—

Zinc, Crystal, &c...50¢10¢

## Boils—

Carriage, Machine &c.—  
Common, list Jan. 30, '95...75¢10¢75¢10¢5¢  
Norway Iron, \$3.00, list Oct. 7, '94...75¢75¢10¢  
Phila. Eagle, \$3.00 list May 24, '99...80¢80¢10¢

Bolt Ends, list Jan. 30, '95...70¢70¢10¢5¢  
Machine, list Oct. 1, '99...75¢10¢75¢  
10¢10¢

## Door and Shutter—

Cast Iron Barrel, Round Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$3.35 3.50 4.50 5.75 8.00

Cast Iron Spring Foot:  
Inch...6 8 10  
Per doz...\$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:  
Inch...6 8 10  
Per doz...\$0.85 1.20 1.50

Cast Iron Shutter, Brass Knobs:  
Inch...6 8 10  
Per doz...\$0.60 .90 1.15

Wrought Barrel Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.45 .50 .61 .70 1.25

Wrought Barrel...70¢10¢75¢5¢  
Wrought...Bronzed, 10¢5¢50¢10¢  
Wrought Flush, B. K., 50¢10¢60¢10¢  
Wrought Shutter...40¢10¢10¢60¢5¢  
Wrought Square Neck...50¢50¢10¢  
Wrought Sun...60¢50¢10¢  
Ives' Patent Door...60¢

## Stove and Plow—

Plow...60¢10¢60¢  
Stove...67 1/2¢

## Tire—

Common...70¢70¢5¢  
American Screw Company:  
Norway Phila., list Oct. 16, '84...75¢  
Eagle Phila., list Oct. 16, '84...77 1/2¢  
Bay State, list Dec. 28, '99...70¢  
Franklin Moore Co.:  
Norway Phila., list Oct. 16, '84...75¢  
Eagle Phila., list Oct. 16, '84...77 1/2¢  
Eclipse, list Dec. 28, '99...70¢  
Port Chester Bolt & Nut Company:  
Empire, list Dec. 28, '99...70¢  
Keystone Phila., list Oct. '84...77 1/2¢  
Norway Phila., list Oct. '84...75¢

## Borers, Tap—

Borer Tap, Ring, with Handle:  
Inch...1 1/4 1 1/2 1 3/4  
Per doz...\$3.50 4.50 5.00 6.50

Inch...3 1/4 3 1/2 3 3/4  
Per Doz...\$7.50 10.25

Enterprise Mfg. Co., No. 1, \$1.35; No. 2, \$1.65; No. 3, \$2.50 each...25¢30¢

## Boring Machines—See Machines, Boring.

## Boxes Mitre—

C. E. Jennings & Co...40¢  
Seavey's, per doz, \$30...40¢

## Braces—

NOTE.—Most Braces are sold at net price.  
Common Ball, American...\$1.10@1.20  
Barber's...60¢10¢10¢60¢10¢  
Fray's Genuine Sportford's...50¢10¢5¢  
Fray's No. 70 to 120, 81 to 133, 207 to 414...50¢10¢5¢  
C. E. Jennings & Co...50¢10¢  
F. S. & W. Co., Peck's Patent...50¢10¢60¢

## Brackets—

Cast Iron, plain...60¢10¢70¢10¢  
Wrought Steel...70¢5¢70¢10¢  
Bradley's Wire Shelf:  
Full cases...80¢  
Broken cases...75¢10¢

## Bright Wire Goods—See Wire and Wire Goods.

## Broilers—

Wire Goods Co...70¢70¢10¢

## Buckets, Well and Fire—

See Pails

## Bucks, Saw—

Hoosier...per gro. \$36.00

## Bull Rings—See Rings, Bull.

## Butts—Brass—

Wrought list Sept., '96...25¢10¢25¢  
Cast Brass, Tiebout's...50¢

## Cast Iron—

Fast Joint, Broad...50¢@.5¢  
Fast Joint, Narrow...50¢@.5¢  
NOTE.—Jobbers often sell the following at 70¢5¢:  
Loose Joint...66¢5¢70¢  
Loose Pin...66¢5¢70¢  
Mayer's Hinges...66¢5¢70¢  
Parliament Butts...66¢5¢70¢  
Wrought Steel—  
Loose Joint...70¢5¢70¢  
Table and Back Flaps...70¢5¢70¢  
Narrow and Broad...70¢5¢70¢  
Inside Blind...70¢5¢70¢  
Loose Pin...70¢5¢70¢  
Loose Pin, Ball and...70¢5¢70¢  
Steeple Tip

## Bronzed Wrt. Nar. and Inside Blind Butts—

50¢10¢50¢10¢5¢

## Cages, Bird—

Hendryx, Brass:  
3000, 5000, 1100 series...5¢  
1200 series...33¢4¢  
200, 300, 600 and 900 series...40¢10¢  
Hendryx Bronze:  
700, 800 series...40¢10¢  
Hendryx Enamelled...40¢10¢

## Calipers—See Compasses.

## Calks, Toe and Heel—

Blunt 1 prong...per lb. 3¢4¢  
Sharp, 1 prong...per lb. 4¢4¢  
Perkins' Blunt...\$ 5 1/2¢  
Perkins' Sharp...\$ 5 1/2¢

## Can Openers—See Openers, Can

## Cans, Milk—

Illinois Pattern...\$ 1.75 2.10 2.25 each.  
Iowa Pattern...2.40 2.60 each.  
Buffalo Pattern...2.70 2.90 each.  
20 80 40 qts.  
New York Pattern...3.25 3.40 each.  
Baltimore Pattern...2.50 2.75 3.10 each.

## Cans, Oil—

Galvanized Blue Band, 1-gal., per doz...\$1.60@1.75

Buffalo Family Oil Cans:  
5 10 gal.  
\$48.00 60.00 108 gro.  
Glass Oil...per doz. \$1.90@2.20

## Caps—Percussion—

Eley's E. B...50¢  
G. D...per M 25¢3¢  
F. L...per M 37¢4¢  
G. E...per M 47¢5¢  
Musket...per M 57¢6¢

## Primers—

Berdan Primers, \$1.00...5¢  
B. L. Caps (Sturtevant Shells) \$1.00...5¢  
All other primers...\$1.10@1.15



### Carpet Stretchers— See Stretchers, Carpet.

### Cartridges—

B. B. Caps, Conn. Ball Supt.	\$1.90
B. B. Caps, Round Ball	\$1.12 @ 1 18
Blank Cartridges:	
28 C. F., \$5.50	10¢50
28 C. F., \$7.00	10¢50
28 cal. Rim, \$1.50	10¢50
28 cal. Rim, \$2.75	10¢50
Central Fire	25¢
Pistol and Rifle	15¢50
Primed Shots and Bullets	15¢50
Rim Fire Sporting	50¢
Rim Fire, Military	15¢50

### Castors—

Bed	70¢70¢10¢
Plate	75¢75¢5¢
Philadelphia	75¢75¢10¢
Boss	70¢10¢
Boss Anti-Friction	70¢10¢
Martin's Patent (Phonix)	45¢
Payson's Anti-Friction Furniture	70¢10¢
Payson's Anti-Friction Truck	70¢10¢
Standard Ball Bearing	45¢
Tucker's Patent, low list	30¢

### Cattle Leaders— See Leaders, Cattle.

### Chain—

American Coll. Full Casks:	
3-16 1/4 5-16 3/4 7-16 1/4 9-16 1/4	
7-16 3/8 5-16 3/8 5-16 3/8 5-16 3/8	
1/4 3/8 1/2 to 1 1/4 inch	
3.10 3.05 5.00 cents per lb.	
Less than Cash lots add 10c per 10 lbs.	
German Coll. list July 24, '97, 80¢10¢10¢	
German Haller Chain, list July 24, '97	80¢10¢10¢
Traces, Western Standard, 100 pair	65¢
6 1/2-6 5/8, Straight, with ring	\$25.00
6 1/2-6 5/8, Straight, with ring	\$27.00
6 1/2-6 5/8, Straight, with ring	\$31.00
6 1/2-6 5/8, Straight, with ring	\$35.00
Add 2¢ per pair for Hooks	
Twist Traces 2¢ per pair higher than Straight Link	
Trace, Wagon and Fancy Chains, list April, '98	50¢10¢00¢
Jack Chain, list July 10, '93	
Iron	60¢60¢10¢
Brass	60¢60¢10¢
Safety Chain	60¢10¢10¢70¢
Gal. Pump Chain	1b 55¢54¢
Covert Sd. Works:	
Breast, Hitching and Rein Chains	50¢
Covert Mfg. Co.:	
Breast	35¢25¢
Halter	35¢25¢
Heel	35¢25¢
Kelch	35¢25¢
Stallion	35¢25¢
Oneida Community:	
Bureau Coll and Halter	60¢60¢5¢
Niagara Coll and Halter	60¢60¢5¢
Niagara Cow Ties	45¢50¢45¢10¢5¢
Am. Coll and Halter	50¢10¢5¢80¢
Am. Cow Ties	35¢50¢40¢5¢
Wire Goods Co.:	
Dog Chain	60¢
Universal Div. Jointed Chain	45¢

### Chalk—(From Jobbers.)

Carpenters', Blue	gro. 45¢
Carpenters', Red	gro. 40¢
Carpenters', White	gro. 25¢

### See also Crayons.

### Chalk Lines—See Lines.

### Checks, Door—

Bardley's	40¢10¢
Columbia	50¢10¢
Keilpe	50¢50¢10¢

### Chests, Tool—

American Tool Chest Co.:	
Boys' Chests with Tools	50¢
Youths' Chests with Tools	45¢
Gentlemen's Chests with Tools	40¢
Farmers', Carpenters', etc., Chests, with Tools	20¢
Mechanists' and Pipe Fitters' Chests, Empty	50¢
C. E. Jennings & Co.'s Mechanists' Tool Chests	35¢37¢10¢

### Chisels—

Standard List	70¢5¢70¢10¢
Buck Bros.	30¢
Charles Buck	30¢
C. E. Jennings & Co. Socket Firmer	30¢
No. 18	30¢10¢
No. 15	30¢10¢
Swan	70¢5¢
L. & L. J. White	90¢90¢25¢

### Tanged Firmer—

Buck Bros.	40¢5¢40¢10¢
Charles Buck	30¢
C. E. Jennings & Co. Socket Framing	30¢
C. E. Jennings & Co. Nos. 191, 181, 255	25¢
L. & L. J. White, Tanged	35¢25¢

### Cold Chisels, good quality lb. 1 1/2 to 1 3/4

Cold Chisels, fair quality	lb. 12¢
Cold Chisels, ordinary	lb. 8¢20¢

### Chucks—

Bench Pat., each \$8.00	20¢
Skinner Patent Chucks:	
Combination Lathe Chucks	40¢
Drill Chucks, Patent and Standard	2 1/2
Independent Lathe Chucks	40¢
Improved Planer Chucks	20¢
Universal Lathe Chucks	40¢
Face Plate Jaws	35¢
Standard Tool Co.:	
Improved Drill Chuck	45¢
Union Mfg. Co.:	
Combination	40¢
Csair Drill	30¢
Geared Scroll	30¢
Independent	40¢
Union Drill	30¢
Universal	40¢
Face Plate Jaws	35¢

### Clamps—

Adjustable, Hammers	20¢20¢5¢
Adjustable, Stearns	30¢
Cabinet, Sargent's	45¢10¢
Carriage Makers', P. S. & W. Co.	40¢10¢
Carriage Makers' Sargent's	50¢10¢
Best, Farrel	30¢10¢
Lineman's Union Drop Forge & Tool Co.	40¢
Saw Clamps, see Vises, Saw Fitters	

### Cleaners Walk—

Star Socket, All Steel	5¢ doz. \$4.00 net
Star Shank, All Steel	5¢ doz. \$3.75 net
W. & C. Sauer, All Steel, 7 1/2 in. d. x 2 1/2 in. l.	\$3.35; 8 in., \$3.40; 8 1/2 in., \$3.50.

### Cleavers, Butchers'—

Poster Bros.	30¢
New Haven Edge Tool Co.	40¢10¢
Nichols Bros., Flat hdl., 30 in. x 1 1/2 in. x 1 1/2 in.	40¢10¢
Fayette R. Plumb	35¢40¢35¢10¢
P. S. & W.	35¢40¢35¢10¢
L. & I. J. White	35¢

### Clippers—

Chicago Flexible Shaft Company	
Handy Toilet	5¢ doz. \$7.50
Mascotte Toilet	5¢ doz. \$1.40
Monitor Toilet	5¢ doz. \$9.00
Stewart's Patent	5¢ doz. \$10.00

### Clips, Axle—

Eagle and Superior 1/4 and 5-16 inch	70¢10¢
Norway, 1/4 and 5-16 inch	70¢10¢

### Cloth and Netting, Wire— See Wire, &c.

### Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.)	70¢5¢70¢10¢
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### Coffee Mills—See Mills, Coffee.

### Collars Dog—

Brass, Pope & Stevens' list	40¢
Embossed, Gilt, Pope & Stevens' list	30¢10¢
Leather Pope & Stevens' list	40¢

### Compasses, Dividers, &c.

Ordinary Goods	70¢10¢75¢
Bemis & Call Hdw. & Tool Co.:	
Dividers	65¢
Callipers, Call's Patent Inside	55¢
Callipers, Double	55¢
Callipers, Inside or Outside	55¢
Callipers, Wing	60¢
Compasses	50¢
J. Stevens A. & T. Co.	25¢10¢

### Conductor Pipe, Galvanized—

Carload	L. C. L.
Eastern	60¢20¢14¢
Central	60¢20¢14¢
Southern	60¢20¢14¢
S. Western	60¢20¢14¢
Terms, 25¢ for cash	
See also Eave Trough.	

### Coolers, Water—

Nos. 1 2 3 4 5 6	
Labrador \$11.50 \$14.00 \$17.50 \$20.00	
8 gal.	
No. 1 2 3 4 5 6	
Iceland \$23.00 \$25.00 \$30.00 \$37.50	
10 12 14 gal.	
\$57.00 \$75.00	

### Coopers' Tools— See Tools, Coopers'.

### Cord Sash—

Braided, Drab	lb. 25¢
Braided, White, Common	lb. 17 1/4 @ 13¢
Cable Laid Italian, lb. A, 15¢; B, 16¢	
Common India	lb. 8¢
Cotton Sash Cord, Twisted	lb. 12¢10¢
Patent Russia	lb. 12¢10¢
Cable Laid Russia	lb. 12¢10¢
India Hemp, Braided	lb. 14¢15¢
Patent India	lb. 10¢12¢
Pearl Braided, cotton	lb. 10¢12¢
Massachusetts, White	lb. 22¢
Massachusetts, D. ab.	lb. 26¢
Eddystone Braided Cotton	lb. 14¢
Harmony Cable Laid Italian	lb. 14¢
O-sawan Mills:	
Crown, Solid Braided White	lb. 18¢
Braided, Giant, White	lb. 17¢
Peerless:	
Cable Laid Italian	lb. 12¢
Cable Laid Russian	lb. 14¢
Cable Laid India	lb. 12¢
Braided India	lb. 14¢
Phonix, White	lb. 10¢
Samson:	
Braided, Drab Cotton	lb. 32¢
Braided, Indian Hemp	lb. 32¢
Braided, Linen	lb. 40¢
Braided, White Cotton, Spot	lb. 28¢
Silver Lake:	
A quality, Drab, 40¢	15¢
A quality, White, 35¢	15¢
B quality, Drab, 35¢	15¢
B quality, White, 30¢	15¢
Italian Hemp, 40¢	15¢
Linen, 57¢	15¢

### Wire, Picture—

Braided or Twisted	
See Trade Report.	

### Corn Knives and Cutters— See Knives, Corn.

### Corn Planters— See Planters, Corn.

### Crackers, Nut—

Little Giant	5¢ gr. \$34.00
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### Cradles—

Grain	50¢
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### Crayons—

White Round Crayons, gross 5¢ @ 60¢	
Cases, 100 gro., \$5.00, at factory.	
D. M. Steward Mfg. Co.:	
Metal Workers' Crayons, gr. \$2.50	
Soapstone Pencils, round, flat or square	gr. \$1.50
Rolling Mill Crayons	gr. \$2.50
Railroad Crayons (composition) gr. \$2.00	

### See also Chalk.

### Creamery Pails—See Pails, Creamery.

### Crooks, Shepherd's—

Fort Madison, Heavy	5¢ doz. \$7.00
Fort Madison, Light	5¢ doz. \$6.50

### Crow Bars—See Bars, Crow.

### Cultivators—

Victor Garden	5¢ doz. \$10.00
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### Cutters—

Smith & Reminway Co.	30¢
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### Meat—

American	30¢
Nos. 1 2 3 4 5 6	
Each	\$5 \$7 \$10 \$25 \$50 \$60
Connections	
No. 1 2 3 4 5 6	
Each	\$1.75 2.25 3.00 3.00 5.50

Enterprise	25¢25¢75¢
Nos. 5 10 12 22 32	
Each	\$2 \$3 \$2.50 \$4 \$8
Dixon's, 5 doz.	\$35¢10¢
Nos. 1 2 3 4	
14.00 17.00 19.00 30.00	
Hale's, 5 doz.	65¢
Nos. 11 12 13	
27.00 33.00 45.00	
Home No. 1, 5 doz.	50¢10¢
Little Giant, 5 doz.	35¢33¢5¢
Nos. 305 310 312 340 322	
\$35.00 \$48.00 \$44.00 \$71.00 \$68.00	
Sterling	35¢5¢
Nos. 1 2 3	
Each	1 2 5
Miles' Challenge, 5 doz.	45¢45¢10¢
Nos. 1 2 3	
\$22.00 \$30.00 \$40.00	
New Triumph No. 605, 5 doz.	\$24.00
Woodruff's, 5 doz.	40¢
Nos. 100 150	
Each	\$15.00 \$18.00

### Chadborn's Smoked Beef Cutter, 5 doz.

Enterprise Beef Shavers	25¢30¢
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### Slaw and Kraut—

Henry Daston & Sons:	
Slaw, Corn Grater, &c.	40¢
Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 55¢	
Kraut Cutters 36 x 12, 40 x 12	40¢
Tucker & Dorsey Mfg. Co.:	
Kraut Cutters	40¢
Slaw Cutters, 1 Knife, 5 gr.	\$12¢\$20
Slaw Cutters, 2 Knife, 5 gr.	\$22¢\$36

### Tobacco—

All Iron, Cheap	5¢ doz. \$4.50 @ \$4.50
Enterprise	25¢30¢
National, 5 doz.	\$21.00
Sargent's, 5 doz.	\$24.00
Appleton's, 5 doz.	\$18.00
Bonney's	50¢10¢10¢

### Diggers, Post Hole, &c.—

Dalbey Post Hole Auger, per doz.	\$10.00
Iwan's Improved Post Hole Auger	40¢
Iwan's Perfection Post Hole Digger	
Kohler's Universal	5¢ doz. \$3.00
Kohler's Little Giant	5¢ d. \$15.00
Kohler's Hercules	5¢ doz. \$12.00
Kohler's Invincible	5¢ d. \$10.00
Kohler's Rival	5¢ d. \$9.00
Kohler's Pioneer	5¢ doz. \$9.00
Never Break Post Hole Diggers, 5 doz.	\$24.00
Samson, 5 doz.	\$34.00

### Dividers—See Compasses.

### Dog Collars—See Collars, Dog.

### Door Checks—

### See Checks, Door.

### Door Springs—

### See Springs, Door.

### Drawers, Money—

Tucker's Pat. Alarm Till No. 1, 5 doz.	\$15; No. 2, \$15 No. 3, \$14; No. 4, \$13.
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### Drawing Knives—

### See Knives, Drawing.

### Drills and Drill Stocks—

Common Blacksmiths' Drill, each	\$1.75 @ \$2.00
Blacksmiths' Self-feeding, each	\$3.75 @ \$4.00
Bench Drills, Stearns	50¢
Breast, Millers Falls, each \$3.00	15¢10¢
Breast, P. S. & W.	30¢30¢10¢
Goodell Automatic Drills	40¢5¢40¢10¢
Johnson's P. S. & W.	40¢10¢
Johnson's Drill Points	25¢10¢
Ratchet, Curtis & Curtis	25¢
Ratchet, Parker's	40¢
Ratchet, Weston's	30¢25¢
Ratchet, Whitney's, P. S. & W.	40¢10¢
Whitney's Hand Drill, No. 1, \$10.00	
Adjustable, No. 10, \$12.00	35¢

### Twist Drills—

### Standard List. 60¢60¢10¢

### Drill Bits or Bit Stock

### Drills—See Augers and Bits.

### Drill Chucks—See Chucks.

### Dripping Pans—

### See Pans, Dripping.

### Drivers, Screw—

**Drawing Knives—**  
See Knives, Drawing.

**Drills and Drill Stocks—**  
Common Blacksmiths' Drill..each  
\$1.75 @ \$2.00

**Gimlets—**

Mail, Metal, Assorted, gro. \$1.50@1.75  
 Nail, Metal, Assorted, gro. \$3.00@3.50  
 Nail, Wood Handled, Assorted,  
 gro. \$1.00@1.25  
 Nail, Wood Handled, Assorted,  
 gro. \$5.00@5.25

**Class, American Window**

Jobbers' List, Sept. 1, 1900.  
 Small lots from store:  
 Single Strength, all sizes. 35¢@5¢  
 Double Strength, all sizes. 35¢@5¢  
 To be added on all first quality,  
 both Single and Double.

**Glue—Liquid, Fish—**

List A, Bottles or Cans, with Brush.  
 75¢@50¢  
 List B, Cans (½ pts., pts., qts.)  
 35¢@15¢  
 List C, Cans (½ gal., gal.)  
 25¢@15¢

**Glue Pots—See Pots, Glue.****Crease, Axle—**

Common Grade. gro. \$5.00@6.00  
 Dixon's Everlasting. 10-in. palls, ea. 85¢  
 Dixon's Everlasting, in box. 2 doz.  
 \$1.20; 3 doz. \$2.00

**Grindstone Fixtures—**

See Fixtures, Grindstone.

**Guards, Snow—**

Cleveland Wire Spring Co.  
 Galv. Steel # 1000. \$9.00  
 Copper # 1000. \$18.00

**Gun Powder—See Powder.****Hack Saws—See Saws.****Hafts, Awl—**

Peg Patent, Leather Top. \$4.90@5.25  
 Peg Patent, Plain Top. \$3.50@3.75  
 Sewing, Brass Ferrule. \$1.50@1.60  
 Saddlers', Brass Ferrule. \$1.35@1.45  
 Peg, Common. \$1.25@1.35  
 Brad, Common. \$1.50@1.75

**Halters and Ties—**

Covert Mfg. Co., Web. 45¢@25¢  
 Covert Mfg. Co., Saddle Rope. 45¢@25¢  
 Covert's Saddlery Works, 90 list, Web.  
 60¢@10¢  
 Covert's Saddlery Works, Leather 60¢@10¢  
 Covert's Saddlery Works, Jute. 60¢@5¢  
 Covert's Saddlery Works, Sisal. 60¢@5¢  
 Covert's Saddlery Works, Manila. 60¢@5¢  
 Covert's Saddlery Works, Cotton. 70¢

**Hammers—****Handled Hammers—**

Heller's Machinists' 50¢@50¢  
 Heller's Farmers' 50¢@50¢  
 Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50,  
 \$1.75.  
 Peck, Stow & Wilcox. 40¢@40¢  
 Fayette R. Plumb:  
 Plumb, A. E. Nail. 40¢@40¢  
 Engineers' and B. S. Hand.  
 60¢@70¢  
 Machinists' Hammers.  
 Riveting and Tinner's. 50¢@50¢  
 Sargent's C. S. New List. 45¢@10¢

**Heavy Hammers and****Sledges—**

3 lb. and under. lb. 45¢  
 3 to 5 lb. lb. 35¢@30¢  
 Over 5 lb. lb. 30¢  
 Wilkinson's Smitis. 9¢@10¢ lb.

**Handcuffs and Leg Irons**

See Police Goods

**Handles—****Agricultural Tool Handles—**

Hoe, Rake, Fork, etc. 60¢@60¢  
 Shovel, etc., Wood D Handle. 50¢@50¢

**Cross-Cut Saw Handles—**

Atkins'. 40¢@5¢  
 Champion. 45¢@45¢  
 Disston's. 50¢

**Mechanics' Tool Handles—**

Auger, assorted. gro. \$2.10@2.20  
 Auger, large. gro. \$2.25@2.50  
 Brad Axl. gro. \$1.50@1.75

**Chisel Handles—**

Apple Tanged Firmer, gro. ass'd.  
 \$1.50@1.75; large, \$2.00@2.20.  
 Hickory Tanged Firmer, gro. ass'd.  
 \$1.75@1.95; large, \$2.25@2.50.  
 Apple Socket Firmer, gro. ass'd.  
 \$1.75@1.95; large, \$2.00@2.20.  
 Hickory Socket Firmer, gro. ass'd.  
 \$1.60@1.75; large, \$1.75@1.95.  
 Hickory Socket Framing, gro. ass'd.  
 \$1.50@1.75; large, \$2.00@2.20.  
 File, assorted. gro. \$1.00@1.15  
 Hammer, Hatchet, etc., \$1.15  
 Hand Saw, Farnished, doz. 75¢@80¢  
 Not Farnished. 55¢@60¢  
 Plane Handles:  
 Jack, doz. \$2.50; Jack Bolted.  
 55¢@60¢  
 Fore, doz. \$2.50; Fore, Bolted.  
 70¢@75¢

**Hangers—****Barn Door, New Pattern, Round****Groove, Regular:**

Inch. 3 4 5 6 8  
 Doz. \$1.10 1.45 1.80 2.10 2.75

**Barn Door, New England Pattern,****Check Back, Round Groove, Regular:**

Inch. 3 4 5 6  
 Doz. \$1.50 2.00 2.60 3.25

**Chicago Spring Butt Co.:**

Friction. 25¢  
 Oscillating. 25¢  
 Big Twin. 25¢

**Chisholm & Moore Mfg. Co.:**

Baggage Car Door. 50¢  
 Elevator. 50¢

**Coleman Hardware Mfg. Co.:**

Czar Ball Bearing, 2 doz. pair \$7.50  
 No. 10 Roller Bearing, doz. pr. 5.50  
 No. 20 Roller Bearing, doz. pr. 4.50  
 Nickel. 50¢  
 Non-Holdback. 50¢@10¢

**Cronk Hanger Co.:**

Loose Axle. 40¢  
 Roller Bearing. 60¢@10¢  
 Lane Bros.:

Parlor, Standard. \$3.25  
 Parlor, New Model. \$2.75  
 Barn Door, Standard. 40¢@10¢  
 Covered. 50¢@10¢@10¢  
 Special. 60¢@10¢  
 Lawrence Bros.:

Advance. 60¢  
 Cleveland. 60¢@10¢  
 Crown. 60¢  
 New York. 60¢  
 Peerless. 60¢@10¢  
 Sterling. 60¢

**McKinney Mfg. Co.:**

No. 2, Standard. \$18.00@10¢  
 No. 1, Special. \$13.00@10¢  
 Stowell Mfg. and Foundry Co.:

Badger. 60¢  
 Baggage Car Door. 33¢@4¢  
 Climax Anti-Friction. 50¢  
 Elevator. 40¢  
 Interstate. 50¢@10¢  
 Matchless. 50¢@10¢  
 Nansen. 50¢@10¢  
 Parlor Door. 50¢  
 Railroad. 50¢@10¢  
 Street Car Door. 50¢@10¢  
 Steel Nos. 300, 400, 500. 40¢@5¢  
 Wild West. 50¢@5¢  
 Zenith for Wood Track. 50¢@10¢

**Taylor & Boggis Foundry Co.:**

Kidder's. 50¢@50¢@10¢  
 American Trackless. 33¢@17¢  
 Wilcox Mfg. Co.:

Bike Roller Bearing. 60¢@10¢  
 C. J. Roller Bearing. 60¢@10¢  
 Cycle Ball Bearing. 50¢  
 Dwarf Ball Bearing. 40¢  
 Ives, Wood Track. 40¢  
 L. B. Roller Bearing. 60¢@10¢  
 New Era Roller Bearing. 50¢@10¢  
 O. K. Roller Bearing. 60¢@10¢  
 Prindle, Wood Track. 60¢  
 Richards' Wood Track. 60¢  
 Richards' Steel Track. 50¢@10¢  
 Roemer Roller Bearing. 60¢@10¢  
 Tanna Nos. 1 and 2. 60¢  
 Underwriters' Roller Bearing. 40¢  
 Wilcox Auditorium Ball Bearing. 20¢  
 Wilcox Barn Trolley No. 123. 40¢  
 Wilcox Fire Trolley, Roller  
 Bearing. 70¢  
 Wilcox Le Roy Noiseless Ball  
 Bearing. 40¢  
 Wilcox New Century. 50¢@10¢  
 Wilcox Trolley Ball Bearing. 40¢

**Harness Menders—See****Harness Snaps—See Snaps.****Hasps—**

McKinney's Perfect Hasp 2 doz. 10¢@10¢  
 Wrought Hasps, Staples, etc.—See  
 Wrought Goods.

**Hatchets—**

Best Brands. 40¢@10¢@50¢  
 Cheaper Brands. 60¢@10¢@50¢  
 Note.—Net prices often made.

**Hay and Straw Knives—**

See Knives.

**Hinges—****Blind and Shutter Hinges—**

Surface Gravity Locking Blind:  
 (Victor; National; 1838 O. P.;  
 Niagara; Clark's O. P.; Clark's  
 Tip; Buffalo.)

No. 1. 1 3 5  
 Doz. pair. \$0.75 1.35 5.60

**Mortise Shutter:**

(L. & P. O. S., Dixie, etc.)

No. 1. 1 1/2 3 1/2  
 Doz. pair. \$0.65 .60 55 .67

**Mortise Reversible Shutter, (Buffalo,**

etc.)

No. 1. 1 1/2 3  
 Doz. pair. \$0.65 .60 55

**Parker**

North's Automatic Blind Fixtures, No.  
 2, for Wood, \$9.00; No. 3, for Brick,  
 \$11.50

Reading Gravity. 75¢@10¢  
 Sargent's, Nos. 1, 3, 5. 60¢@10¢  
 Sargent's, Nos. 11 & 18. 70¢@10¢  
 Wrightsville Hardware Co.:

O. S. Lull & Porter. 30¢@24¢  
 Acme, Lull & Porter. 75¢@10¢  
 Queen City Reversible. 75¢@10¢  
 Stenger's Positive Locking, Nos. 1 &  
 3. 70¢@10¢  
 Shepard's Noiseless, Nos. 80, 65, 55.  
 70¢@10¢

**Niagara, Gravity Locking, Nos. 1, 3 &**

18. Old Pat'n. Nos. 1, 3 & 5. 75¢@7¢  
 Tip Pat'n. Nos. 1, 3 & 5. 75¢@7¢  
 Buffalo Gravity Locking, Nos. 1, 3 &  
 5. 75¢@7¢  
 Shepard's Double Locking, Nos. 20  
 & 25. 70¢@10¢  
 Champion Gravity Locking, No. 75¢@7¢  
 Steamboat Gravity Locking, No. 10.  
 75¢@7¢  
 Pioneer, Nos. 80, 45 & 5. 75¢@7¢  
 Empire, Nos. 101 & 103. 70¢@7¢  
 V. Co.'s Mortise Gravity Locking,  
 No. 2. 60¢@10¢

**Stanley's Steel Gravity Blind Hinges,**

2 doz. sets \$1.20. 20¢@10¢

**Gate Hinges—**

Clark's or Shepard's—Doz. sets:  
 No. 1. 1 2 3  
 Hinges with Latches. \$1.90 2.50 4.25  
 Hinges only. 1.30 1.55 3.20  
 Latches only. 0.70 0.70 1.20

**New England:**

With Latch. doz. \$1.75@1.90  
 Without Latch. doz. \$1.40@1.45

**Reversible Self-Closing:**

With Latch. doz. \$1.65@1.75  
 Without Latch. doz. \$1.50@1.55

**Western:**

With Latch. doz. \$1.60@1.65  
 Without Latch. doz. \$1.00@1.05

**Wrightsville Hardware Co.:**

Shepard's or Clark's, Nos. 1 & 2. 65¢@24¢  
 Shepard's or Clark's, No. 3. 55¢@5¢

**Spring Hinges—**

Holdback, Cast Iron, gro. \$9.00@10.00  
 Non-Holdback, Cast Iron. gro. \$7.00@7.50

**J. Bardsley**

Bardsley's Patent Checking. 15¢  
 Bommer Bros.:

Chicago Spring Butt Co. 33¢@4¢  
 Chicago. 20¢  
 Floor Hinge. 40¢  
 Garden City Engine House. 20¢  
 Keene's Saloon Door. 20¢  
 Coleman Hardware Co.:

Champion Holdback. 2 gr. \$10.00  
 J. G. C. 2 gr. \$8.50  
 Nickel. 2 gr. \$9.00

**Lawson Mfg. Co.:**

Matchless. 30¢  
 Payson Mfg. Co.:

Oblique, Dbl. Acting. 50¢@50¢  
 Stover Mfg. Co.:

Ideal, No. 16, Detachable, 2 gr. \$2.50  
 Ideal, No. 4. 2 gr. \$2.00  
 New Idea No. 1. 2 gr. \$2.00  
 New Idea, Double Acting. 45¢  
 Van Wagoner & Williams Hdw. Co.:

Acme, 4 rt. Steel. 30¢  
 Acme, Brass. 30¢  
 American. 30¢  
 Columbia, No. 14. 2 gr. \$2.00  
 Columbia, No. 18. 2 gr. \$2.50  
 Columbia, Adjustable. 30¢  
 Gem, new list. 25¢  
 Clover Leaf. 2 gr. \$12.50  
 Oxford new list. 25¢

**Wrought Iron Hinges—**

Strap and T Hinges, etc., list Mar.  
 15, 1899:

Light Strap Hinges. 66¢@4¢  
 Heavy Strap Hinges. 70¢  
 Light T Hinges. 50¢@1¢  
 Heavy T Hinges. 60¢@10¢  
 Extra Heavy T Hinges. 60¢@10¢

**Hinge Hasps. 45¢**

Cor. Heavy Strap. 70¢  
 Cor. Ex. Heavy T. 60¢

**Roller Plate. 70¢@70¢**

Screw Hook 6 to 13 in. lb. 2¢@3¢  
 14 to 20 in. lb. 2¢@2¢  
 and Strap. 23 to 36 in. lb. 2¢@2¢

**Screw Hook and Eye:**

3/4 to 1 inch. lb. 5¢@6¢  
 1 1/2 inch. lb. 6¢@7¢  
 2 inch. lb. 7¢@8¢

**Hods, Coal—**

Galv. Open. \$2.05 2.20 2.15 2.65 2 doz.  
 Jap. Open. \$1.55 1.70 1.85 2.05 2 doz.  
 Galv. Funnel. \$2.75 2.90 3.10 3.45 2 doz.  
 Jap. Funnel. \$2.00 2.15 2.35 2.70 2 doz.

**Hoes—Eye—**

Scovill and Oval Pattern. 60¢@50¢@10¢  
 Grub. list Feb. 23, 1899. 65¢@55¢@10¢  
 D. & H. Scovill. 65¢@55¢@35¢

**Handled—**

Field and Garden. 75¢@2¢  
 Ladies', Boys', Toy and Onion. 70¢@10¢@10¢

Street and Mortar. 75¢@7¢@2¢  
 Cotton. 70¢@10¢@10¢  
 Planters'. 70¢@30¢  
 Weeding. 75¢  
 Note.—Manufacturers and jobbers use  
 a diversity of lists, and often sell at net  
 prices.

Ft. Madison Crucible Garden Hoe. 75¢@3¢  
 Ft. Madison Crescent Cultivator Hoe,  
 per doz. 75¢@10¢  
 Ft. Madison Mattock Hoes:  
 Regular Weight. 2 doz. \$4.50  
 Junior Size. 2 doz. \$4.80  
 Ft. Madison Sprouting Hoe, 2 doz. \$4.80  
 Ft. Madison Dixie Tobacco Hoe. 75¢@2¢  
 Kretzinger's Cut Easy, per doz. 75¢@2¢  
 Warren Hoe. 60¢  
 W. & C. Ivanhoe. 75¢@2¢  
 B. E. Cultivator Hoe. 75¢@10¢  
 Acme Weeding. 75¢@10¢  
 W. & C. Lightning Shovel Hoe, 2 doz.  
 \$5.50

**Hog Rings and Rings—**

See Rings and Rings.

**Hoisting Apparatus—**

See Machines, Hoisting.

**Hollow Ware—**

See Ware, Hollow.

**Holders—Bit—**

Angular, 2 doz. \$24.00. 45¢@10¢

**File and Tool—**

C. E. Jennings & Co. Mod. A Fool Hold-  
 ers. 33¢@4¢  
 Nicholson File Holders and File Hand-  
 les. 33¢@4¢

**Hooks—****Cast Iron—**

Bird Cage, Reading. 50¢@10¢@60¢  
 Bird Cage, Sargent's List. 50¢@10¢  
 Clothes Line, Sargent's List. 50¢@10¢  
 Ceiling, Sargent's List. 20¢@10¢@10¢  
 Clothes Line, Stowell's. 70¢  
 Clothes Line, Reading List. 65¢@10¢@5¢@10¢@10¢

**Coat and Hat, Stowell's. 70¢**

Coat and Hat, Reading. 70¢@75¢  
 Coat and Hat, Sargent's List. 35¢@10¢  
 Coat and Hat, Wrightsville. 85¢@10¢  
 Harness, Reading List. 70¢@10¢@75¢

**Wire—**

Atlas. 75¢@75¢@10¢  
 Atlas, Coat and Hat:  
 Single Cases. 45¢  
 10 Case Lots. 45¢@10¢  
 Czar Harness. 50¢@10¢  
 Wire Coat and Hat:  
 Acme. 50¢@10¢  
 B. B. 50¢@10¢  
 V. B. 50¢@10¢  
 Gem. 50¢@10¢  
 Bright Wire Goods—See Wire.

**Wrought Iron—**

Box, or Case, Octagon Steel. doz. \$2.10@2.20

Cotton. doz. \$1.05@1.15

Wrought Staples, Hooks, etc.—See Wrought Goods.

**Miscellaneous—**

Bush, Light, doz. \$5.50; Medium,  
 \$6.00; Heavy, \$6.50

Grass. Nos. 1 2 3 4  
 Best. \$1.50 1.75 2.00  
 Common. \$1.50 1.50 1.50 1.75

Potato and Manure. 70¢  
 Whiffletres. lb. 4¢  
 Hooks and Eyes:  
 Brass. 60¢@10¢@10¢@70¢  
 Malleable Iron. 70¢@5¢@70¢@10¢  
 Covert Saddlery Works' Self Locking  
 Gate and Door Hook. 80¢@10¢  
 Crown Picture. 50¢@10¢  
 Bench Hooks—See Bench Stops.  
 Corn Hooks—See Knives, Corn.

**Horse Nails—See Nails, Horse****Horsehoes—**

See Shoes, Horse.

**Hose Rubber—**

Garden Hose, 3/4-inch: 4¢@4¢  
 Competition. ft. 5¢@6¢  
 3-ply Standard. ft. 8¢@9¢  
 4-ply Standard. ft. 9¢@10¢  
 5-ply extra. ft. 11¢@12¢  
 4-ply extra. ft. 11¢@12¢  
 Cotton Garden, 3/4-in., coupled:  
 Low Grade. ft. 8¢@7¢  
 Fair quality. ft. 8¢@9¢

**Irons—Sad—**

From 1 to 10. lb. 3¢@3¢  
 B. E. Sad Irons. lb. 3¢@4¢  
 Chinese Laundry. lb. 5¢@5¢  
 Chinese Sad. lb. 3¢@3¢  
 Mrs. Potts', per set:  
 Nos. 50 55 60 65  
 75c 69c 82c 79c  
 New England Pressing. lb. 3¢@3¢  
 Soldering:  
 Soldering Coppers. 1 & 1 1/2 lb. \$1 @  
 25¢; 2 lb. 19¢@21¢  
 Covert Mfg. Co. 20¢@2¢  
 Pinking:  
 Pinking Irons. doz. 50¢@50¢

**Jack Screws—See Screws.****Jacks, Wagon—**

Covert Mfg. Co., Steel. 45¢@25¢  
 Dalsey. 70¢  
 Lockport. 40¢@40¢@10¢  
 Victor. 60¢  
 Lane's Steel. 40¢

**Kettles—**

Brass, Spin



**Ladies—Melting—**

L. & Mfg. Co. .... 60%  
P. S. & W. .... 40@40.10%  
Reading ..... 50@10%  
Sargent's ..... 40@40.10%

**Lanterns—Tubular—**

Regular Tubular ..... doz. \$4.50@5.50  
Side Lift Tubular ..... doz. \$4.75@5.25  
Square Lift Tubular ..... doz. \$4.75@5.25  
Other styles ..... 40@10@40.10@5%

**Bull's Eye Police—**

2 1/2-inch flash light ..... doz. \$3.50@5.75  
5-inch flash light ..... doz. \$4.00@4.25  
2 1/2-inch regular ..... doz. \$3.25@3.50  
5-inch regular ..... doz. \$3.50@5.75

**Latches, Thumb—**

Roggin's Latches ..... doz. \$2@3.50

**Lawn Mowers—**

See Mowers, Lawn.

**Leaders, Cattle—**

Small ..... doz. 45c; large, 55c  
Covert Mfg. Co. .... 45@2%

**Lemon Squeezers—**

See Squeezers, Lemon.

**Lifters, Transom—**

Dickson:  
3 x 4 ft. x 1/2" ..... \$100 \$11.00  
Other sizes, iron ..... 70@10%  
Other sizes, Brass and Bronze ..... 70%  
Excelsior ..... 60@60.10%  
Payson's:  
Bolt Grip Nos. 649 and 644 ..... doz. \$1.00  
Bronzed Iron ..... 70%

**Lines—**

Wire Clothes, Nos. 18 19 20  
100 feet ..... \$3.40 2.25 1.70  
75 feet ..... \$1.80 1.70 1.30

**Ossawa Mills—**

Crown Solid Braided Chalk ..... 33 1/2%  
Mason's, No. 0 to No. 5 ..... 33 1/2%  
Samson Cordage Works, No. 0 to 3 ..... 40%  
Silver Lake Braided Chalk, No. 0, 96.00;  
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50  
No. 4 ..... 30%

**Locks, &c.—Cabinet—**

Cabinet Locks ..... 33 1/2%@33 1/2%  
Door Locks, Latches, &c.—  
[Net prices are very often made on  
these goods.]

Reading Hardware Co. .... 20%  
R. & E. Mfg. Co. .... 20%  
Sargent & Co. .... 40@40.10%  
Slaymaker-Harry Co. .... 30@35%  
Snow's Victor ..... 50@10%

**Elevator—**

Stowell's ..... 33 1/2%

**Padlocks—**

Wrought Iron, list Dec. 3, '07 ..... 75@10%  
Dog Collar, S. B. Co. .... 40%  
R. & E. Mfg. Co. Wrt Steel and Brass 50%  
S. B. & Co. .... 40%

**Sash, &c.—**

Fitch's Bronze and Brass ..... 66 1/2%  
Fitch's Iron ..... 70%  
Ives' Patent ..... 55@65%  
Oeffinger's Automatic ..... 50%  
Payson's Patent ..... 70%  
Payson's Signal (new list) ..... 75%  
Reading ..... 60@10@10@70%

**Machines—****Boring—**

Without Augers.  
Upright. Angular.  
Improved No. 3 ..... \$4.25 No. 1 \$5.00  
Improved No. 4 ..... 3.75 No. 2 5.33  
Improved No. 5 ..... 2.75  
Jennings ..... 2.50 3.00  
Millers' Falls ..... 5.75  
Snell's, Rice's Pat. 5.50 2.75  
Swan's, No. 500 ..... 5.10 No. 200 6.45

**Hoisting—**

Moore's Anti-Friction Differential Pul-  
ley Block ..... 30%  
Moore's Hand Hoist, with Lock Brake 30%

**Ice Cutting—**

Chandler's ..... 15%

**Washing—**

Wayne American, doz. \$38.00

Western Star, No. 2, doz. 28.00

Western Star, No. 3, doz. 30.00

St. Louis, No. 41, doz. 60.00

**Mallets—**

Hickory ..... 45@50@55%

Lignumvita ..... 45@50@55%

Tinners', Hickory and Applewood,  
doz. 50@55%

Fiber Head Stearns' ..... 50@10%

**Mats—**

Elastic Steel (W. G. Co.) ..... 10%

**Mattocks—**

See Picks and Mattocks.

**Meat Cutters—**

See Cutters, Meat.

**Milk Cans—See Cans, Milk****Mills—Coffee—**

Box and Side, list Jan. 1, '08 ..... 50@10@50@60@5%

Net prices are often made on some  
goods which are lower than above  
discounts.

Enterprise Mfg. Co. .... 25@30%

National, list Jan. 1, '04 ..... 30%

Parker's Columbia and Victor ..... 50@10@60%

Parker's Box and Side ..... 50@10@60%

Swift, Lane Bros. .... 30%

**Mincing Knives—**

See Knives, Mincing.

**Molasses Cates—**

See Cates, Molasses.

**Money Drawers—**

See Drawers, Money.

**Mowers, Lawn—**

Net prices are generally quoted.

Cheap ..... all sizes, \$2.00

Good ..... all sizes, \$2.50@2.75

High Grade ..... 10 12 14 16-inch

Pennsylvania and Continental 50@10%

Quaker City ..... 70%

Great American ..... 70@5%

Philadelphia:  
Styles M., S. C. K., T. .... 70@5%

Style A, all Steel ..... 60@10%

Style F, Low Wheel ..... 70@10%

Style E, High Wheel ..... 70@10%

Drexel and Gold Coin, low list ..... 50@5%

**Nails—**

Cut and Wire. See Trade Report.

Wire Nail and Brads, Papered.

List July 20, 1899 ..... 85@85@10%

Hungarian, Finishing, Upholster-  
ers', &c. See Tacks

**Horse—**

Nos. 6 7 8 9 10

A. C. .... 25@23@22@21@20

Capewell ..... 10@18@17@16@15@14

C. B. K. .... 25@23@22@21@20

Chaplain ..... 25@23@22@21@20

Maud S. .... 25@23@22@21@20

Neponset ..... 23@21@20@19@18

Putnam ..... 23@21@20@19@18

Standard ..... 23@21@20@19@18

Star ..... 23@21@20@19@18

Vulcan ..... 23@21@20@19@18

Picture

1 1/2 2 3 4 5 6 7 8 9 10 in.

Brass Head, 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 2 1/2

Por. Head, 1 1 1 1 1 1 1 1 1 1

Nippers, See Pliers and Nippers.

**Nut Crackers—**

See Crackers, Nut.

**Nuts—**

List Feb. 1, '09.

Cold Punched Off

Mfrs. or U. S. Standard, list.

Hexagon, plain ..... 6.50

Square, plain ..... 6.20

Square, C. T. & R. .... 6.80

Hexagon, C. T. & R. .... 7.10

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stan'd.

Square ..... 6.40

Hexagon ..... 7.10

Note.—Tapped Nuts are now 2 1/2 in.

higher than above.

**Oakum—**

Best or Government ..... lb. 6 1/4c

Navy ..... lb. 5 c

U. S. Navy ..... lb. 5 1/2c

Plumbers' Spun Navy ..... lb. 5 c

In carload lots 1/4 lb. off f.o.b. New

York.

**Oil, Axle—**

Snow Flake:

1 pt. cans, per doz. .... \$3.00

1 qt. cans, per doz. .... \$4.50

1 gal. cans, per doz. .... \$15.00

5 gal. cans, per doz. .... \$68.00

**Oil Tanks—See Tanks, Oil.****Oilers—**

Brass and Copper ..... 40@10@50%

Tin or Steel ..... 60@10@65%

Zinc ..... 60@10@65%

Malleable, Hammers' Improved, No. 1.

\$3.60; No. 2, \$4; No. 3, \$4.40 per doz.

Malleable, Hammers' Old Pattern.

same list ..... 50@10%

Wmott & Hobbs Mfg. Co.:

Spring Bottom Cans ..... 70@70@10%

Railroad Oilers etc. .... 60@60@10%

**Oponers—****Can—**

French ..... doz. 35c

Iron Handle ..... doz. 25@70c

Sprague, Iron Handle, per doz. 25@10c

Sardine Scissors ..... doz. \$1.75@2.00

Tip Top ..... per doz. \$0.75

National, per gro. .... \$1.75@2.00

Stowell's ..... per doz. 40@45;

Waldorf, per gro. .... \$3.00

Nickel Plate ..... per doz., \$2.00

Silver Plate ..... per doz., \$4.00

**Packing—****Rubber—**

Standard, fair quality ..... 70@10@75%

Inferior quality ..... 75@10@80%

Extra ..... 60@50@60@10@%

Jenkins' Standard, per doz. 35@25@5%

**Miscellaneous—**

American Packing ..... 9@10c lb.

Cotton Packing ..... 15@15c lb.

Italian Packing ..... 10 1/2@11 1/4c lb.

Jute ..... 5@5 1/2c lb.

Russia Packing ..... 12@13c lb.

**Pails—****Creamery—**

S. S. & Co., with gauges, No. 1 \$3.50;

No. 2, \$0.75 per doz.

**Galvanized—**

Price per gro.

Inch. 10 18 14

Water, Regular ..... 15.00 21.00 25.00

Water, Heavy ..... 22.00 25.00 28.00

Fire, Rd. Bottom. 31.00 33.00 35.00

Well ..... 27.00 29.00 31.00

**Pans—****Dripping—**

Standard List ..... 60@80@5%

**Fry—**

Standard List ..... 75@10@80%

**Roasting and Baking—**

Regal, S. S. & Co., per doz. Nos. 5, \$4.50;

10 \$5.00; 20 \$5.50; 30 \$6.00.

Simplex, per gro., No. 40 \$30.00; 50,

\$34.50; 60 \$39.00; 140, \$33.00; 150,

\$37.50; 160, \$43.00.

**Paper—****Building Paper—**

Per roll

Rosin Sized Sheathing: 500 sq. ft.

Light wt., 20 sq. ft. to lb. \$0.40@0.45

Medium wt., 12 sq. ft. to lb. ....

Heavy wt., extra quality, \$0.95@1.05

Medium Grades Water Proof

Sheathing ..... \$0.80@1.25

Deafening Felt, 9, 6 and 4 1/2 sq. ft.

to lb., ton ..... \$10.00

York Haven Waterproof Sheathing.....

\$1.35@1.75

**Tarred Paper.**

1 ply (roll 300 sq. ft.), ton ..... \$28.00

2 ply, roll 100 sq. ft. .... 55c

3 ply, roll 100 sq. ft. .... 80c

**Sand and Emery—**

List Dec. 23, 1899 ..... 50@10@50%

**Parers—****Apple—**

Advance ..... per doz. \$4.50

Baldwin ..... per doz. \$5.00

Bonanza ..... each \$5.00

Dandy ..... each \$7.50

Eureka, 1898 ..... each \$16.00

Family Bay State ..... per doz. \$12.00

Hudson's Little Star ..... per doz. \$4.00

Hudson's Rocking Table ..... per doz. \$5.50

Improved Bay State per doz. \$27.00@30.00

New Lightning ..... per doz. \$5.50

Reading 72 ..... per doz. \$4.00

Reading 78 ..... per doz. \$7.00

Turn Table '08 ..... per doz. \$5.50

White Mountain ..... per doz. \$4.00

**Potato—**

Saratoga ..... per doz. \$5.50

White Mountain ..... per doz. \$4.50

**Picks and Mattocks—**

List Feb. 23, 1899 ..... 75@75@10%

**Pinking Irons—**

See Irons, Pinking.

**Pins—****Escutcheon—**

Brass ..... 60@10%

Iron, list Nov. 11, '85 ..... 60@10%

**Pipe, Cast Iron Soil—****Factory Shipments.**

Standard, 2-6 in. .... 70@70@5%

Extra Heavy, 2-6 in. .... 75%

Fittings ..... 75@10@30%

**Pipe, Merchant, Boiler**

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**Shovels and Tongs—**

Brass Head.....60¢50¢60¢10¢  
Iron Head.....60¢50¢60¢10¢

**Sieves and Sifters—**

Hunter's Imitation, gro. \$11.00@12.00  
Buffalo Metallic Blue, S. S. & Co., gr. 14 & 16 16 & 18 18 & 20  
\$12.90 \$13.80 \$15.00  
Eclipse.....gr. \$10.00  
Electric Light.....gr. \$12.00  
Hunter's Genuine.....gr. \$12.50  
Shaker (Barber's Pat.) Flour Sifters.....\$2.00  
\$ doz. \$2.00.....\$0.00

**Sieves, Tin Rim—**

Inch.....Per dozen  
1 16 18 20  
Black, full size.....\$0.95 .98 1.00 1.10  
Plated, full size.....\$1.05 1.03 1.10 1.20  
Black, scant.....\$0.78 .80 .63

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 Inch.  
Mesh 18, Nested, doz.....\$0.75@0.80  
Mesh 20, Nested, doz......85@.90  
Mesh 24, Nested, doz.....1.00@1.05

**Sinks—**

Cast Iron—  
Standard list.....60¢60¢10¢  
Note: There is not entire uniformity in lists used by jobbers.

**Wrought Steel—**

Columbus Galv'd and Enameled.....60¢5¢  
Columbus, Painted.....40¢5¢  
L. & G. Mfg. Co., Galvanized.....50¢  
L. & G. Mfg. Co., Enameled.....50¢

**Skeins, Wagon—**

Cast Iron.....70¢10¢75¢  
Malleable Iron.....40¢10¢50¢  
Steel.....40¢10¢50¢

**Slates—**

"D" Slates.....60¢10¢50¢10¢10¢  
Unexcelled Noiseless Slates.....60¢5¢10¢5¢10¢5¢

Wire Bound.....40¢10¢50¢  
Double Slates, add \$1 case, net.

**Slaw Cutters—See Cutters.**

Slicers, Vegetable—  
Sterling \$2.00.....33¢4¢

**Snap, Harness—**

German.....40¢40¢10¢  
Covert Mfg. Co.:  
Deroy.....35¢2¢  
High Grade.....45¢2¢  
Jockey.....44¢2¢  
Trojan.....45¢2¢

Covert's Saddlery Works:  
Banner.....60¢10¢  
Crown.....60¢10¢  
Triumph.....60¢10¢

W. & E. T. Fitch Co.:  
Bristol.....40¢10¢  
Empire.....50¢5¢  
German.....40¢  
National.....50¢5¢  
Perfect.....45¢  
Clipper.....50¢5¢  
Champion.....40¢  
Security.....40¢  
Victor.....60¢5¢

Onelda's Community:  
Solid Steel.....85¢65¢10¢  
Solid Swivel.....85¢10¢45¢10¢10¢  
Sargent's Patent Guarded.....60¢5¢10¢

**Snaths—**

Scythe.....55¢5¢

**Snips, Tinner's—See Shears.****Soldering Irons—**

See Irons, Soldering.

**Spoke Trimmers—**

See Trimmers, Spoke.

**Spoons and Forks—**

Silver Plated—

Flat Ware.....50¢10¢60¢10¢  
Wm. Rogers Mfg. Co.....50¢10¢

**Miscellaneous—**

German Silver.....60¢10¢  
Wm. Rogers Mfg. Co.:  
18% German Silver.....60¢  
Rogers' Silver Metal.....50¢10¢

**Springs—**

Door—

Gem (Coll).....20¢  
Star (Coll).....30¢  
Torrey's Rod, 30 in., gr. doz. \$1.10@1.25  
Warner's No. 2, gr. doz. \$2.50; No. 3, \$3.00.....60¢10¢  
Victor (Coll).....50¢10¢10¢

**Carriage, Wagon, &c.**

Factory Shipments.

1 1/4 in and wider.....Blk. Hf. Brt. Brt.  
4 1/4 4 1/2 4 3/4 4 1/2 lb  
Cliff's Bolster Springs.....35¢  
Cliff's Seat Springs.....\$ pair 55¢

**Perkins, Lawn—**

Enterprise.....25¢30¢  
Philadelphia No. 1, gr. doz. \$12; No. 2, \$15; No. 3, \$24.....30¢

**Squares—**

Nickel plated.....List Jan. 5, 1900

Steel and Iron.....70¢10¢  
Rosewood Hd. Try Square and T-Bevels.....80¢10¢10¢70¢  
Iron Hd. Try Squares and T-Bevels.....40¢10¢40¢10¢10¢

Diaston's Try Sq. and T-Bevels.....60¢10¢  
Winterbottom's Try and Miter.....50¢10¢

**Squeezers—**

Lemon—

Wood, Common, gro., No. 0, \$5.25  
\$5.50; No. 1, \$6.50@8.50.  
Wood, Porcelain lined:  
Cheap.....doz. \$2.00@2.75

Good Grade.....doz. \$3.00@3.50  
Tinned Iron.....doz. \$0.75@1.25  
Iron, Porcelain Lined doz. \$2.90@3.25  
Jennings' Star.....gr. doz. \$1.85@1.90  
King.....gr. doz. \$2.00

**Staples—**

Barbed Blind.....lb. 8 1/4 @ 8 1/2  
Electricians', Association list, 7¢@10¢  
Fence Staples, same price as Barbed Wire. See Trade Report.  
Poultry Netting, Staples.....per lb. 5¢  
Grand Crossing Tack Co.'s list.....80¢10¢

**Steels, Butchers—**

Dick's.....40¢  
Foster Bros.....30¢  
C. & A. Hoffmann's.....40¢  
Nichols Bros.....50¢

**Steelyards.....5¢@75¢10¢****Stocks and Dies—**

Blacksmiths'.....40¢@10¢10¢  
Gardner Die Stocks No. 1.....50¢  
Garliver Die Stocks, larger sizes.....40¢  
Green River.....25¢  
Lightning Screw Plate.....25¢  
Little Giant.....25¢  
Reece's New Screw Plates.....25¢30¢  
Curtis Reversible Ratchet Die Stock.....25¢

**Stone—****Scythe Stones—**

Chicago Wheel & Mfg. Co.:  
Gem Corundum, 10 inch, \$10.50 per  
gro., 12 inch, \$12.00  
Cleveland Stone Co., list Nov. '92.....33¢4¢  
Pike Mfg. Co., list '95-'96.....33¢4¢

**Oil Stones, &c.**

Chicago Wheel & Mfg. Co.:  
Corundum Oil, Double grit.....50¢  
Corundum Axe Stones, Slips, etc.....55¢  
Pike Mfg. Co.:  
Hindustan No. 1, gr. doz. 8¢  
Sand Stone.....33¢4¢  
Turkey Oil Stone, Extra.....33¢4¢  
5 to 8 in.....30¢  
Turkey Slips.....\$1.50

Lily White Washita.....60¢  
Rosy Red Washita.....60¢  
Washita Stone, Extra.....50¢  
Washita Stone, No. 1.....40¢  
Washita Stone, No. 2.....30¢  
Lily White Slips.....90¢  
Rosy Red Slips.....90¢  
Washita Slips, Extra.....80¢  
Washita Slips, No. 1.....70¢  
Arkansas Stone, No. 1, 3 to 5 in. \$2.50  
Arkansas Stone, No. 1, 5 to 8 in. \$3.50

India Oil Stones.....25¢  
Tanite Mills:  
Emery Oil, gr. doz. \$3.00.....50¢60¢

**Stoners—****Cherry—**

Enterprise.....25¢30¢

**Stops, Bench—**

Millers Falls.....15¢10¢  
Morill's.....\$10.00; No. 2, \$11.00, 40¢20¢

**Stops, Window—**

Ives' Patent.....25¢5¢  
Wilcox, Steel, per doz., \$0.00.....50¢

**Stove Boards—**

See Boards, Stove.

**Stove Polish—See Polish, Stove.****Strainers, Pump—**

Diamond Joe Pump Strainers, per doz. 75¢

**Straps, Box—**

Cary's Universal case lots.....20¢10¢

**Stretchers, Carpet—**

Cast Iron, Steel Points.....doz. 55¢65¢  
Cast Steel, Polished.....doz. 22.25  
Socket.....doz. \$1.75

**Stuffers, Sausage—**

Miles' Challenge, gr. doz. \$20.....50¢50¢5¢  
Enterprise Mfg. Co.....25¢25¢7¢  
National Specialty Mfg. Co., list Jan. 1, '97.....30¢

**Tacks Brads, &c.—**

See Trade Report.  
List Jan. 15, '99.

Carpet Tacks, American.....90¢10¢  
American Cut Tacks.....90¢30¢  
Swedes Iron Tacks.....90¢10¢  
Swedes Upholsterers' Tacks.....90¢10¢  
Gimp Tacks.....90¢10¢  
Lace Tacks.....90¢10¢  
Trimmers' Tacks.....90¢30¢  
Looking Glass Tacks.....70¢10¢  
Bill Posters' and Railroad Tack.....90¢10¢  
Hungarian Nails.....80¢25¢  
Common and Patent Brads.....70¢10¢  
Trunk and Clout Nails.....80¢10¢

NOTE.—The above prices are for straight weights. An extra 1/2 is given Star Weights and an extra 10¢ is on Standard Weights.

**Miscellaneous—**

Double Point Tacks.....90¢7¢10¢  
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50¢10¢60¢  
See also Nails, Wire.

**Tanks, Oil—**

Emerald, S. S. & Co.....30-gal. \$3.30  
Emerald, S. S. & Co.....60-gal. \$1.00  
Queen City S. S. & Co., 40-gal. \$3.50  
Queen City S. S. & Co., 60-gal. \$4.25

**Tapes, Measuring—**

American Asses' Skin.....40¢10¢50¢  
Patent Leather.....25¢30¢55¢  
Steel.....10¢40¢55¢

Chesterman's.....25¢@25¢5¢  
Eddy's Steel.....40¢40¢5¢  
Eddy's Metallic.....33¢4¢5¢  
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35¢  
Lufkin's Steel.....39¢4¢5¢  
Lufkin's Metallic.....30¢30¢5¢

**Thermometers—**

Tin Case.....80¢90¢10¢

**Ties, Bale—Steel.**

Standard Wire.....50¢10¢5¢

**Ties, Wall—**

Cleveland Wire Spring Co.:  
Galv. Steel 5 3/2 x 3 1/4 in. \$10.00  
Galv. Steel 5 3/2 x 3 1/4 in. \$10.00  
Galv. Steel 5 3/2 x 1 1/4 in. \$10.00  
Galv. Steel 5 3/2 x 1 1/4 in. \$10.00

**Tinner's Shears, &c.—**

See Shears, Tinner's, &c.

**Tinware—**

Stamped, Japanned and Pieced, sold very generally at net prices.

**Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.****Tobacco Cutters—**

See Cutters, Tobacco.

**Tools—****Coopers—**

L. & J. J. White.....20¢20¢5¢

**Saw—**

Atkins' new list.....40¢  
Simonds' Improved.....33¢4¢  
Simonds' Crescent.....25¢

**Ship—**

L. & J. J. White.....25¢

**Transom Lifters—**

See Lifters, Transom.

**Traps—Game—**

Oneida Pattern.....70¢10¢75¢10¢  
Newhouse.....45¢50¢  
Hawley & Norton.....65¢50¢  
Victor (Oneida Pattern).....75¢75¢10¢  
Star (Blake Pattern).....65¢10¢70¢5¢

**Mouse and Rat—**

Mouse, Wood, Choker, doz. holes 9¢@9¢  
Mouse, Round or Square Wire.....doz. \$0.85@1.00  
Diamond Joe Mouse Traps.....per doz. \$1.00  
Marty French Rat and Mouse Traps (Genuine):  
No. 1, Rat, Each \$1.12 1/2; gr. doz. \$12.00  
No. 3, Rat, gr. doz. \$6.00; case of 50 \$5.25 doz.  
No. 3 1/2, Rat, gr. doz. \$4.75; case of 72 \$4.25 doz.  
No. 4, Mouse, gr. doz. \$3.50; case of 72 \$4.75 doz.  
No. 5, Mouse, gr. doz. \$2.75; case of 72 \$3.25  
Schuyler's Rat Killer, No. 1, gr. \$30.00; No. 2, gr. \$30.00; Mouse, No. 3, \$18.00.....5¢

**Fly—**

Balloon, Globe or Acme.....doz. \$1.15@1.25; gro. \$12.00@14.00  
Harper, Champion or Farago.....doz. \$1.25@1.40; gro. \$15.50@15.00

**Trimmers, Spoke—**

Bonney's Nos. 1 and 2.....40¢  
Stearns.....25¢

**Trowels—**

Diaston Brick and Pointing.....30¢  
Diaston Plastering.....25¢  
Diaston "Diamond Brand" and G. A. Trowels.....40¢  
Never-Break Steel Garden Trowel.....gro. \$7.00  
Peace's Plastering.....30¢  
Rose Brick and Plastering.....25¢5¢  
Woodrough & McFarlin, Plastering.....25¢10¢

**Trucks, Warehouse, &c.—**

R. & L. Block Co.'s list.....40¢  
Daily State Trucks, improved pattern.....doz. \$21.00  
Model State Trucks.....gr. doz. \$18.50

**Tubs, Wash—**

No. 1 2 3  
Galvanized, per doz. \$5.00 5.50 6.00  
Galvanized Wash tubs (S. S. & Co.):  
No. 1 2 3 10 20 30  
Fer doz \$5 25 6.00 6.75 6.30 7.25 8.00

**Twine—**

Miscellaneous—

Flax Twine— BC B.  
No. 9, 1/4 and 1/2-lb. Balls.....22¢ 26¢  
No. 12, 1/4 and 1/2-lb. Balls.....19¢ 22¢  
No. 18, 1/4 and 1/2-lb. Balls.....16¢ 19¢  
No. 24, 1/4 and 1/2-lb. Balls.....15¢ 19¢  
No. 36, 1/4 and 1/2-lb. Balls.....15¢ 18¢  
Chalk Line, Cotton, 1/4-lb. Balls.....18¢20¢  
Cotton Mops, 6, 9, 12 and 15 lb. doz.....7¢8¢  
Cotton Wrapping, 5 Balls to lb.....9¢16¢  
American 2-Ply Hemp, 1/4 and 1/2-lb. Balls.....12¢13¢  
American 3-Ply Hemp, 1-lb. Balls.....12¢13¢  
India 2-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine).....10¢10¢  
India 3-Ply Hemp, 1-lb. Balls.....10¢

**India 3-Ply Hemp, 1 1/4-lb. Balls.....**

2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls.....

**Mason Line, Linen, 1/2-lb. Balls.....**

No. 24 Mattress, 1/4 and 1/2-lb. Balls.....

**Wires—**

Solid Box.....40¢  
Bonney's Saw Wires.....40¢

**Parallel—**

Athol Machine Co.:  
Simpson's Adjustable.....4¢  
Standard.....4¢  
Amateur.....2¢  
Bonney's.....40¢10¢  
Flaher & Norris Double Screw.....15¢10¢  
Hollands':  
Machinists'.....40¢  
Key-tons.....70¢  
Lewis Tool Co.....20¢25¢  
Massey's Perfect.....15¢20¢  
Massey's Clincher.....30¢40¢  
Merrill's.....20¢  
Miller's Falls.....low list 20¢  
Parker's:  
V.ctor.....20¢25¢  
Regulars.....20¢25¢  
Vulcan.....40¢45¢  
Combination Pipe.....50¢60¢  
Prentiss.....20¢25¢  
Sargent's.....40¢  
Simpson's Adjustable.....40¢  
Snediker's X. L.....20¢25¢  
Stephens.....20¢25¢  
Toler's Woodworking.....35¢  
Van, W. & V. Hdw. Co.....40¢

**Saw Filers—**

Bonney's, No. 1, \$13; No. 3, \$10.50@10¢  
Diaston's D 3 Clamp and Guide, gr. d. 2 \$30.....25¢  
Reading.....40¢10¢  
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30¢75¢

**Miscellaneous—**

Bignall & Keeler Combination Pipe Vise.....60¢

Parker's Combination Pipe:  
87 Series.....60¢  
187 Series.....80¢5¢  
No. 870.....40¢

**Wads—Price Per M.**

R. E., 11 up.....60¢  
B. E., 9 and 10.....70¢  
B. E., 8.....80¢  
B. E., 7.....80¢  
F. E., 11 up.....\$1.00  
F. E., 9 and 10.....1.25  
F. E., 8.....1.50  
F. E., 7.....1.60  
Ely's B. E., 11 and larger.....\$1.70@1.75  
Ely's F. E., 11 to 20.....\$3.00@3.25

**Wagon Jacks—**

See Jacks, Wagon.

**Ware, Hollow—**

Aluminum—  
S. S. & Co. Reduced List.....40¢

**Cast Iron, Hollow—**

Stove Hollow Ware:  
Ground.....65¢65¢10¢  
Unground.....70¢70¢10¢  
White Enameled Ware:  
Maslin Kettles.....80¢80¢10¢  
Boilers and Saucepans.....60¢60¢5¢  
Tinned Boilers and Saucepans.....50¢5¢60¢  
See also Pots, Glue.

**Enameled—**

Agate Nickel Steel Ware, list July '99, 35¢  
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40¢10¢  
Second quality, Agate Nickel Steel.....65¢  
Second quality, Granite.....70¢10¢70¢10¢10¢

Iron Clad:  
Peppered Ware, high list.....70¢  
Mottled Ware, high list.....75¢  
Never Break Enameled.....50¢5¢50¢10¢

**Tea Kettles—**

Galvanized Tea Kettles:  
Inch.....6 7 8 9  
Each.....46¢ 50¢ 55¢ 65¢

**Steel Hollow Ware.**

Avery Spiders & Griddles.....65¢65¢5¢  
Avery Kettles.....90¢  
Porcelain.....50¢5¢50¢10¢  
Never Break Spiders and Griddles.....65¢65¢5¢  
Never Break Kettles.....60¢80¢10¢  
Solid Steel Spiders & Griddles.....65¢5¢  
Solid Steel Kettles.....60¢  
Solid Steel Ware, Enameled.....50¢5¢

**Silver Plated Hollow—**

William Rogers Mfg. Co.....40¢10¢

**Washboards—**

Solid Zinc.....\$ doz.  
Crescent, family size, bent frame, \$3.00  
Iced Star, laundry size, stationary protector.....\$4.25  
Double Zinc Surface:  
Saginaw Globe, family size, stationary protector.....\$2.65  
Wilson, family size, bent frame.....\$2.75  
Single Zinc Surface:  
Solid protector, family size, open back perforated.....\$2.40  
Saginaw.....lobed, protector, family size, ventilated back.....\$2.25  
Wilson, bent frame, family size, ventilated back.....\$2.25





# CURRENT METAL PRICES.

OCTOBER 24, 1900.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL— Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ lb; Square, 0.8¢ lb	
1 to 1½ in. round and square	1.05@1.75¢
1½ to 4 in. x ½ to 1 in.	
Refined Iron:	
1 to 1½ in. round and square	1.70@1.80¢
1½ to 4 in. x ½ to 1 in.	1.90@2.00¢
1½ to 4 in. x ½ to 5-10	2.10@2.20¢
Rods—¾ and 1-16 round and square	2.10@2.20¢
Angles:	
3 in. x ½ in. and larger	2.00¢
3 to 3½ in. x ½ in.	2.10¢
1½ to 3 in. x ½ in.	2.00¢
1½ to 3½ in. x ½ in.	2.10¢
1 to 1½ in. x 3-16 in. and thicker	2.10¢
1 to 1½ in. x 3-16 in.	2.20¢
¾ x ½ in.	2.50¢
¾ x ½ in.	2.55¢
¾ x ½ in.	3.20¢
¾ x 3-16 in.	3.70¢
Teas:	
1 in.	2.40¢
1½ in.	2.30¢
1½ in. and larger	2.20¢
Beams:	
Channels, 3 in. and larger	2.50¢
Bands—¾ to 6 x 3-16 to No. 8	2.25¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S. Iron, base price	2.95¢
"Uster"	3.60¢
Norway Bars	4.40¢
Norway Shapes	4.50¢

## Merchant Steel from Store—

Bessemer Machinery	1.70 to 1.80¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7.5¢
Best Cast Steel Machinery, base price in small lots	6¢

## Soft Steel Sheets—

¼ inch	1.85¢	No. 14	2.40¢
5-16 inch	1.90¢	No. 16	2.50¢
No. 8	2.00¢	No. 18	2.80¢
No. 10	2.20¢	No. 20	3.20¢
No. 12	2.30¢	No. 22	3.30¢

## Sheet Iron from Store.

### Black.

	Common	R. G. Cleaned
No. 14 to 16	2.90¢	3.00¢
No. 17 to 21	3.00¢	3.10¢
No. 22 to 24	3.10¢	3.20¢
No. 25 and 26	3.20¢	3.30¢
No. 27	3.30¢	3.40¢
No. 28	3.40¢	3.50¢
No. 29	3.40¢	3.50¢

## Russia, Planished, &c.

Genuine Russia, according to assortment	10¢
Patent Planished	10¢
Galvanized.	

	B. B.
No. 10 to 16	15¢
No. 17 to 21	16¢
No. 22 to 24	17¢
No. 25 to 26	18¢
No. 27	19¢
No. 28	20¢
No. 29	21¢
No. 30	22¢
80 in. 1½ in. higher	23¢

## Foreign Steel from Store—

Best Cast	15¢
Extra Cast	16¢
Swaged Cast	17¢
Best Double Shear	18¢
Blister, 1st quality	19¢
German Steel, Best	20¢
2d quality	21¢
3d quality	22¢
Sheet Cast Steel, 1st quality	23¢
2d quality	24¢
3d quality	25¢
R. Musher's "Special"	26¢
"Titanic"	27¢
Hobson's Choice X & Extra Best	28¢
Jessop Self Hardening	29¢
Seamans' "Nelson" Steel	30¢
Hobson's "Soho" Special Self-Hardening	31¢

## METALS—

### Tin—

Duty.—Pigs, Bars and Block. Free.	
Banca, Pigs	30¢@31¢
Straita, Pigs	30¢@31¢
Straita in Bars	30¢@31¢

### Tin Plates—

#### American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	7.50
IX, 14 x 20	9.00
Melyn Grade:	
IC, 14 x 20	7.00
IX, 14 x 20	8.50
Allaway Grade:	
IC, 14 x 20	6.15
IX, 14 x 20	7.25

#### American Coke Plates—Bessemer—

IC, 14 x 20	105¢
IX, 14 x 20	5.35
IXX, 14 x 20	7.60

#### American Terne Plates—

IC, 20 x 28	10.50
IX, 20 x 28	12.50

#### Tin Boiler Plates, American—

IXX, 14 x 20	112 sheets	\$13.00
IXX, 14 x 28	112 sheets	14.00
IXX, 14 x 31	112 sheets	15.50

### Copper—

Duty: Pig, Bar and Ingot and Old Copper free	
Manufactured, 2½¢ lb.	

### Ingot—

Like	17¼@17½¢
Assonla grade Casting	17@17½¢

## Sheet and Bolt—

January 19, 1900.

Net.

Prices, in cents per pound.

Sheet 30 x 60.

	Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	30 oz. to 64 oz. 25 to 30 lb.	34 oz. to 38 oz. 18½ to 25 lb.	36 oz. to 44 oz. 16 oz. to 24 lb.	40 oz. and 15 oz. 12 oz. to 16½ lb.	44 oz. and 13 oz. 9½ to 11 lb.	50 oz. and 11 oz. 7½ to 9½ lb.	54 oz. and 9 oz. 6½ to 7½ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
30	72	30	72	30	72	30	72	30	72	30	72	30
30	96	30	96	30	96	30	96	30	96	30	96	30
30	120	30	120	30	120	30	120	30	120	30	120	30
30	144	30	144	30	144	30	144	30	144	30	144	30
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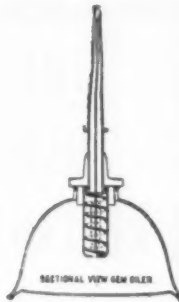
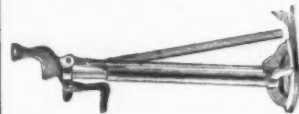
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DEALERS  
IN**OLD RUBBER** IN THE WORLD.**THEODORE HOFELLER & CO.,**

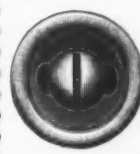
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grade of SCRAP RUBBER.

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costs  
as little as  
the worse oilers  
but are  
the best oilers  
made.

**GEM MANUFACTURING CO.,**200, 202 Wood St.,  
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**ARE THE BEST.**  
Highest Quality Grooming and  
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## THE WM. A. CLARK PATENT EXPANSIVE BIT.



**TWO SIZES** { Small size Bores from  $\frac{1}{4}$  in. to  $1\frac{1}{2}$  in.  
Large " " "  $\frac{3}{8}$  in. " 3 in.

**SPECIAL CUTTERS:** No. 5—For Large Bit, Bores from 3 in. to 4 in. No. 6—For Large Bit, Bores from 4 in. to 5 in.

Stock and workmanship superior to all others. Every part interchangeable.

*Quality guaranteed.* For sale by all Hardware Dealers.

Manufactured by **R. H. BROWN & CO.,** New Haven, Conn.

*You take no risk on the quality.  
We make only the best!*



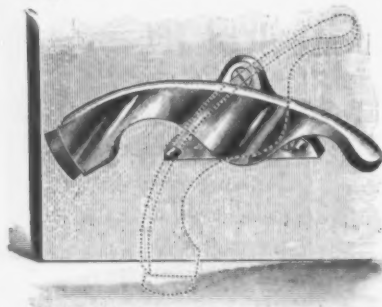
**SAND PAPERS** { Flint Paper  
Carnet Paper  
Emery Paper  
Emery Cloth  
IN Reams and Rolls

**HAIR FELTING** for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

**BAEDER, ADAMSON & CO.**

730 MARKET STREET, PHILADELPHIA.  
67 BECKMAN STREET, NEW YORK.  
143 MILK STREET, BOSTON.  
162 LAKE STREET, CHICAGO.

## Empire Door Holder.



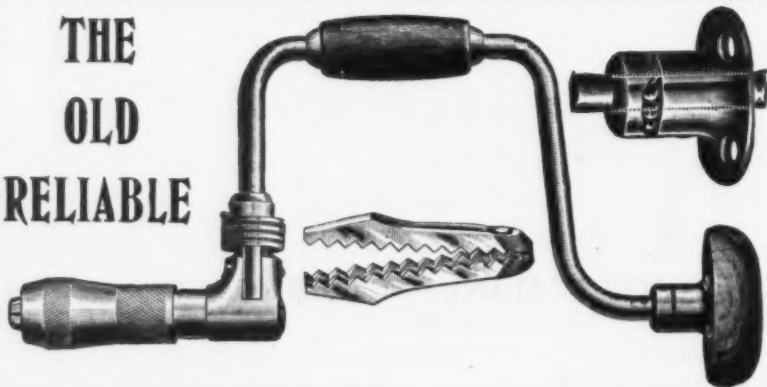
Operated by a light pressure of the toe. No bending over. The Rubber Tip and Spring Action make it particularly desirable for use on carpet, polished wood or tiled floor.

MANUFACTURED BY

**CALDWELL MFG. CO.,**

ROCHESTER, N. Y., U. S. A.

**THE  
OLD  
RELIABLE**



## BARBER BRACE

Still holds its grip as firmly with both dealer and mechanic as it does on the shank of the bit, and after having been on the market from thirty to forty years is all the time growing more and more popular.

It is, we think, generally conceded to be the leader in quality, style and beauty of finish.

Made with and without ratchets and in various grades to suit the demand. Also with Drill Attachments.

Every dealer should have one of our catalogues No. 36 describing our full line. It will be mailed to you if asked for.

**MILLERS FALLS CO.,**

No. 28 Warren St., New York, N. Y., and Millers Falls, Mass.

OTHER TOOLS ARE VERY GOOD TOOLS, BUT—

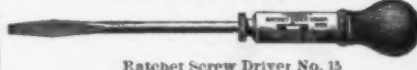
**"YANKEE" TOOLS ARE BETTER.**



Ratchet Screw Driver No. 10.



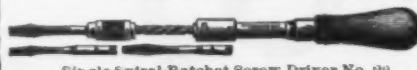
Double Spiral-Ratchet Screw Driver No. 30.



Ratchet Screw Driver No. 15.



Automatic Drill No. 40.



Single Spiral-Ratchet Screw Driver No. 20.



Reciprocating Drill No. 50.

Sold by Leading Jobbers. Send for "YANKEE" Tool Book No. 2, Just Issued.

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**MONCE'S NOVELTY GLASS CUTTERS. INTERCHANGEABLE LOCK STENCILS.**

No. 1 Cutter, born 1871, and has been worthy of extensive imitation, that is why I keep it before you. We make others. S. G. MONCE, UNIONVILLE, CONN.

# DISSTON'S SKEWBACK HAND SAWS.



The Design and Construction Throughout was  
**Originated and Patented**

BY THE LATE

**HENRY DISSTON,**

June 23d, 1874, and Dec. 8th, 1874.

All Saws Made After This Pattern **ARE COPIES**  
of the Invention of *HENRY DISSTON*.

## DISSTON SAWS

— ARE —

**Imitated But Not Duplicated,**

Either in Material, Workmanship or Finish.

## HENRY DISSTON & SONS,

Keystone Saw, Tool, Steel and File Works,

PHILADELPHIA, PENNA.



## The Atkins Number Fifty=Three

Perfection Hand Saw is an extra high-grade of Silver Steel with Damaskeened finish, the handle is put on in such way as to make it the most evenly balanced saw on the market. This saw gives the best of satisfaction wherever used.

Highest Awards—Two Gold Medals Paris Exposition.

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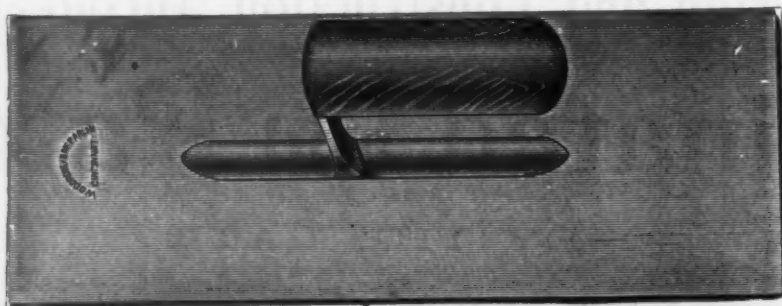
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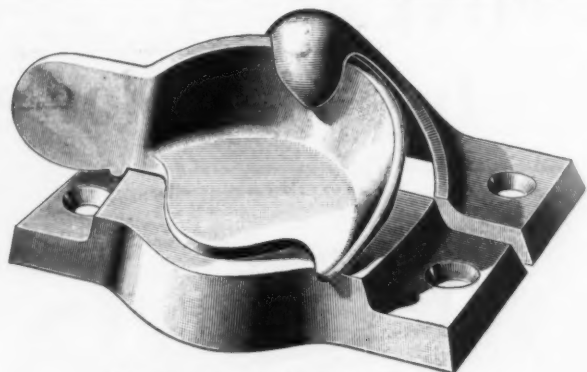


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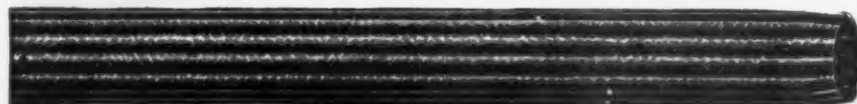
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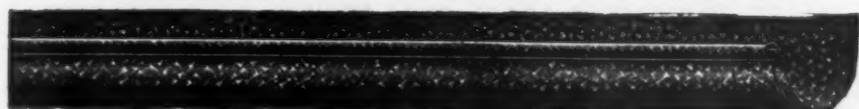
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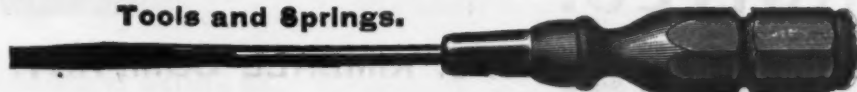
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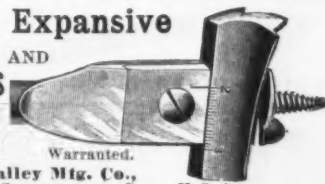
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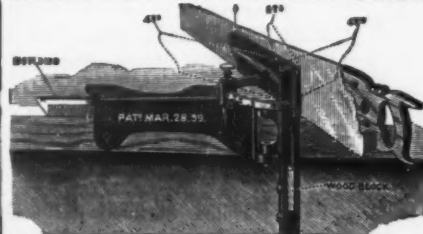
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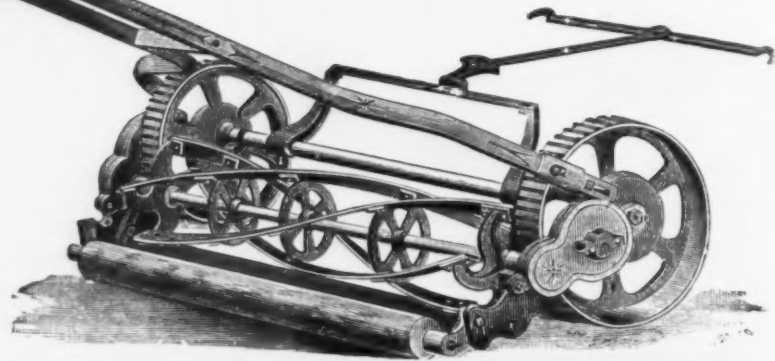
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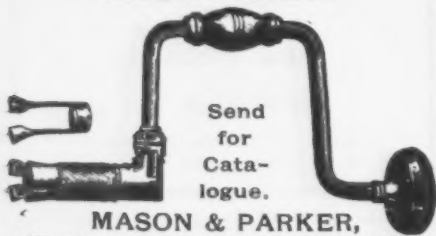


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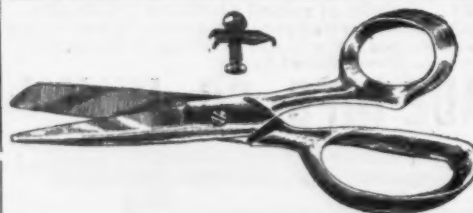


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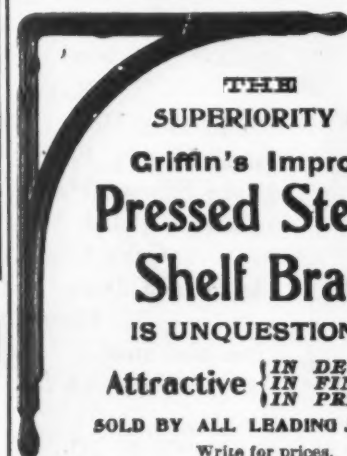
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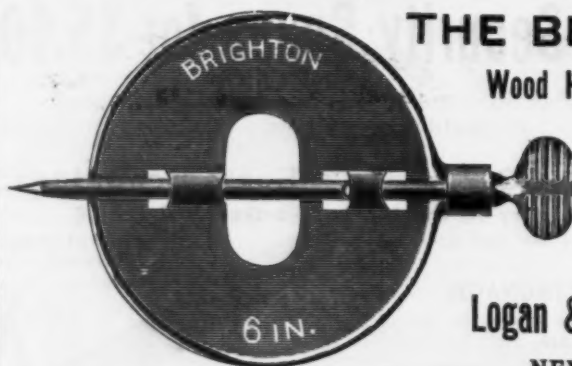
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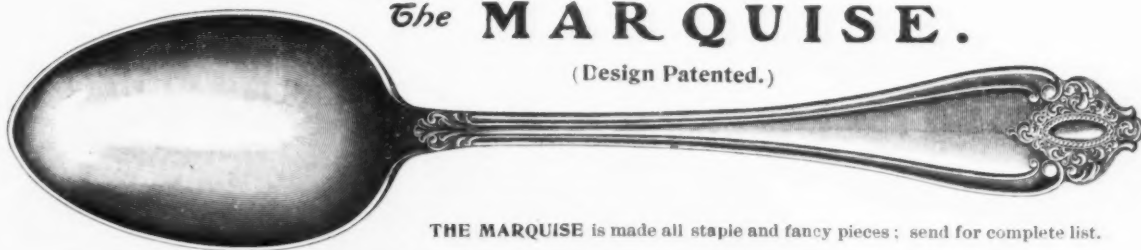
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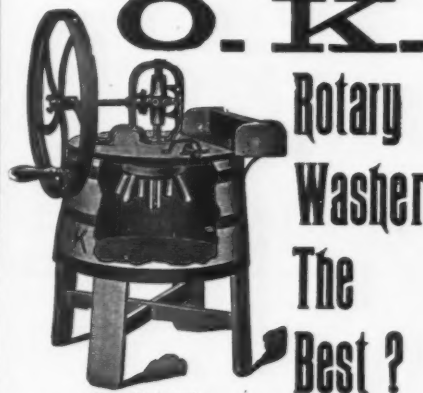
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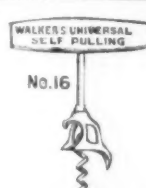
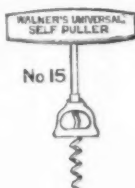
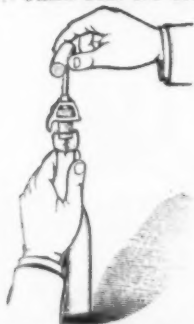
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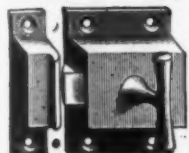
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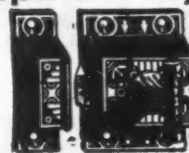
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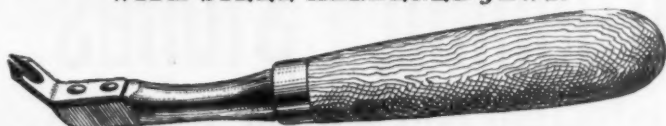
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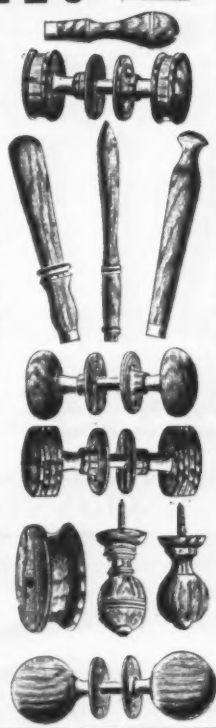
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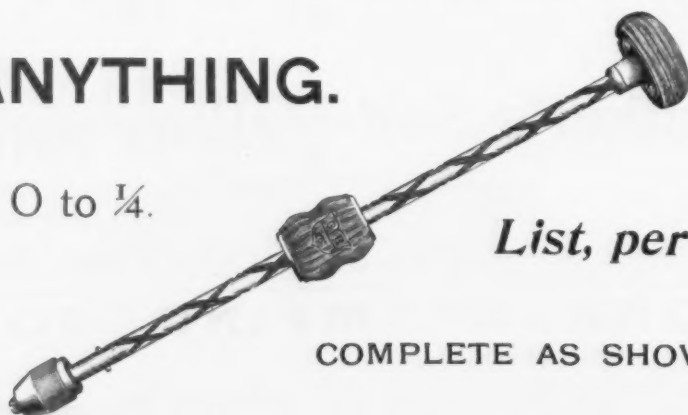


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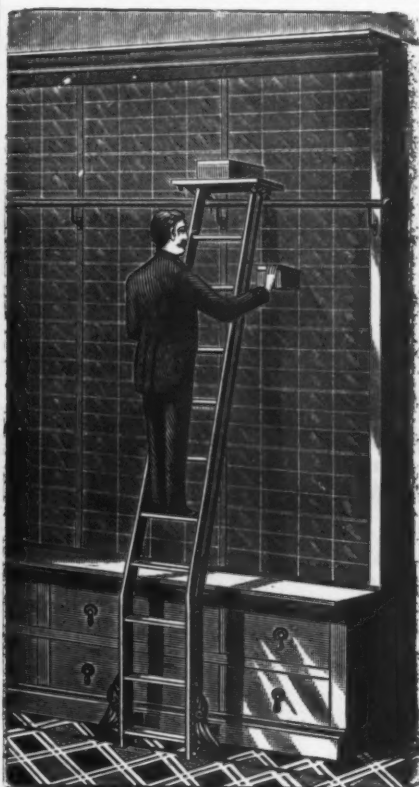
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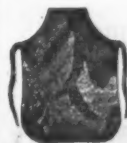
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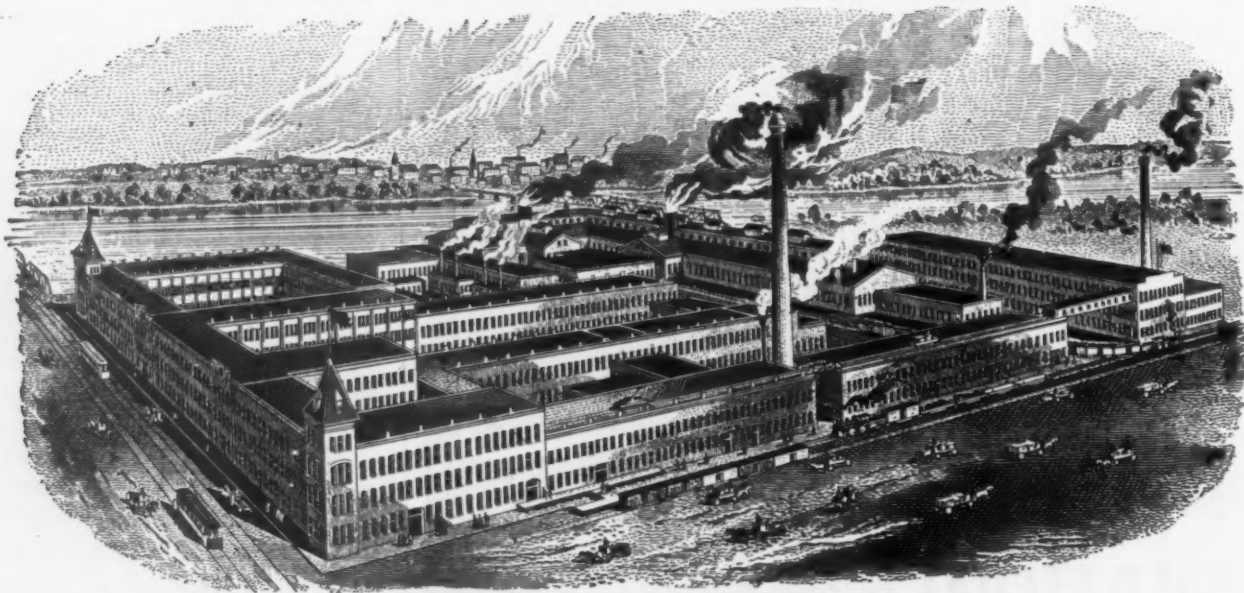
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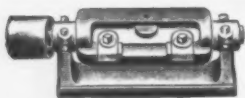
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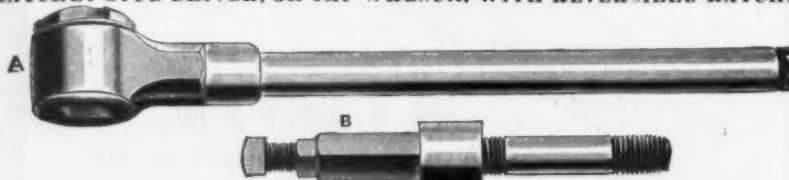
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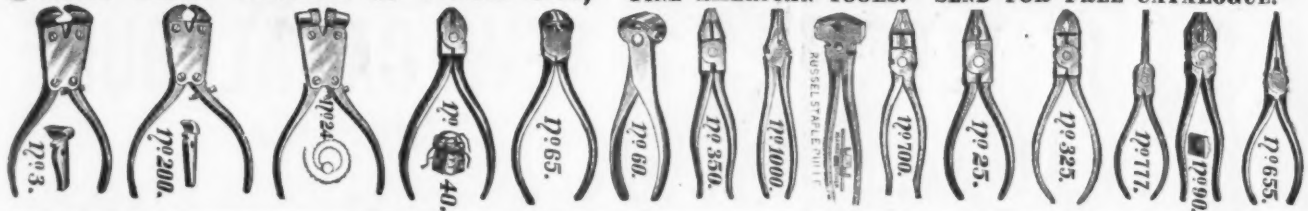
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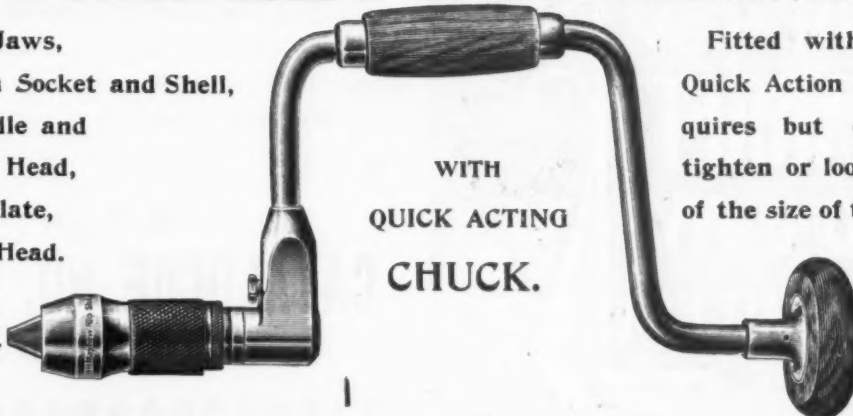
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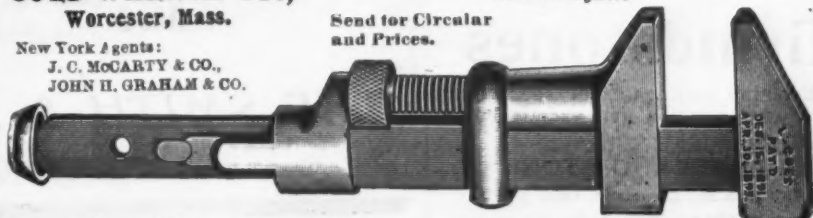
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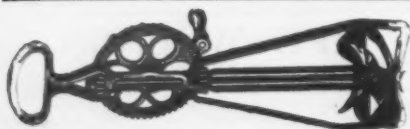
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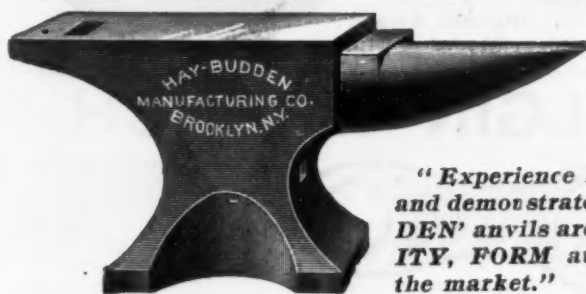


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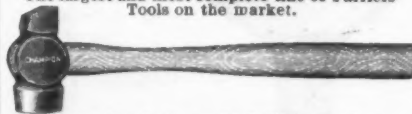
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All genuine tools marked **Champion**.



Jones Patented  
**COPING SAW.**

This saw is constructed with a tubular back, through which runs a string or a cable, connecting both ends of saw frame, which causes the blade to turn to any angle by turning the handle only without removing it from the work. Send for circular.

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Manufacturers,

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VICES, MEAT CHOPPERS, Etc.

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ESTABLISHED 1842.

## THE ARCADE FILE WORKS

THE ARCADE FILE WORKS at Anderson, Indiana, is the largest and most completely equipped plant for the manufacture of Files in the world.

The highest inventive genius and mechanical talent has been concentrated on ONE Modern Plant, which is directed by master minds—originators of a distinctly improved product—machinery and methods up-to-date.

Back of an Arcade File stands this guarantee: That our Arcade File will cut faster and wear longer than any other file on the market, and as an "earnest" of this guarantee, The Arcade File Works will send to any responsible Hardware Jobber, Wholesaler or Retailer, one dozen Arcade Files, to become the property of the receiver or returned at our expense if the guarantee is not fully borne out in every particular.

NEW YORK CITY, 97 Chambers St., 79 Reade St. WORKS, ANDERSON, IND. CHICAGO, 118 Lake Street.

Severance  
Centering Tool,  
PRICE \$2.00

Combination  
Center Drills,  
PRICE \$1.50 PER DOZ.

With these two tools you can center your work in two operations. It requires at least four in the old way.

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Le COUNT'S  
"DOUBLE TAIL" LATHE DOG.

Manufactured by

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Successor to C. W. Le  
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Send for Catalogue  
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OF ALL DESCRIPTION,  
ESPECIALLY FOR FACTORIES  
Send for Catalogue and Prices.

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Ventilators and Sheet Metal Work.



Sole Manufacturers of the celebrated

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ESTABLISHED  
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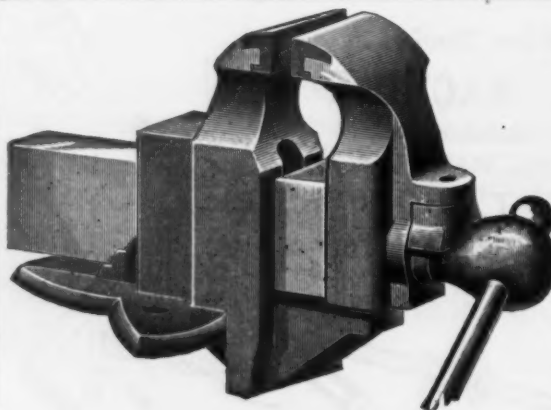
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Extra Jaw.

The best general purpose wrench on the market. It will turn a nut, hold a pipe or twist a rod. It is not clumsy, but flat and neat. It is the only adjustable wrench (with its range of work that can be conveniently carried in the pocket. When jaws wear out, old ones can be replaced with new. Nickel plated and perfectly constructed. Write us for prices.

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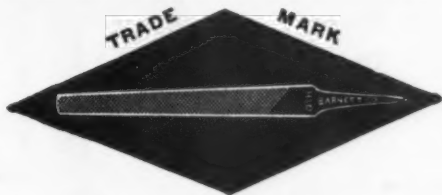
**HOWARD IRON WORKS,**  
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Also Manufacturers of Passenger  
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Established 1863. Incorporated 1895.

Twelve Medals of  
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Special Grand Prize  
GOLD MEDAL,  
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Manufacturers of

### BUTTON'S Pat. Wire Cutter AND PLIER COMBINED.

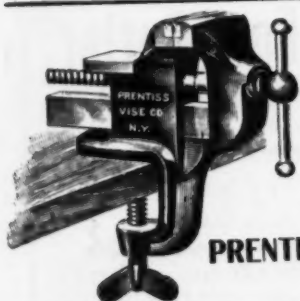
Specially Adapted for Use on Wire Fence.

Also manufacturers of BLACKSMITHS' and  
MACHINISTS' STOCKS and DIES, PLUG and  
TAPER TAP, HAND, NUT and SCREW TAPS,  
PIPE TAPS and REAMERS.

Price-List on Application.

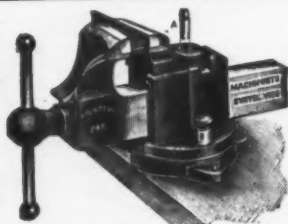


Established by DANIEL B. KING, 1839.



We make all  
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of Vises.

Descriptive Catalogue Free.



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Sole Agents for Great Britain: CHAS. NEAT & CO.,  
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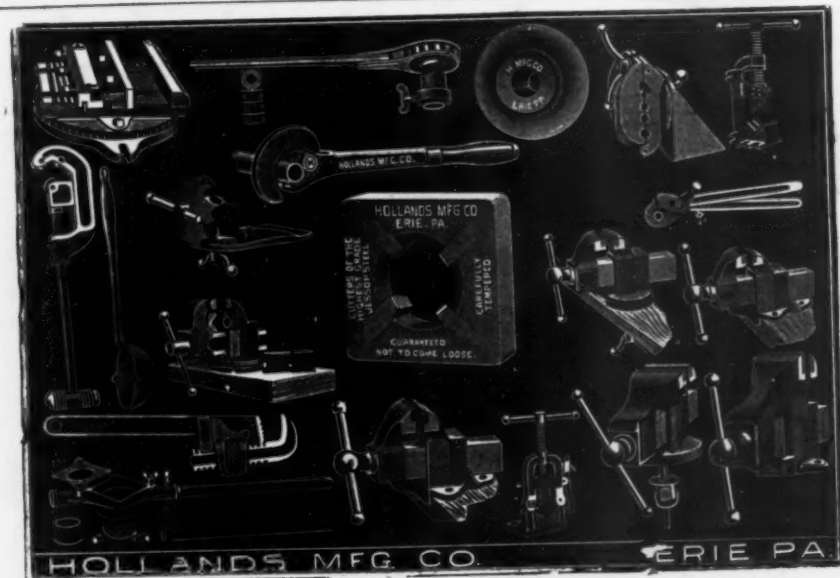
## Lewis Patent Quick-Acting Vise

Durable, Powerful  
and Tenacious  
as any Screw Vise.

Commence to draw as soon as lever  
is started and have sufficient gear  
for any kind of work.

Send for Illustrated Catalogue.

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This Chain Pipe Wrench

has interchangeable jaws. Improved method of  
holding and releasing chain. No locking. Send for  
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Die Sinkers, Steel  
and Brass Stamps  
Seals, Stencil Dies  
for Stencil Cutting,  
Die Letters, Stamping Letters, Brands,  
Badges and Medals, Key Checks, Door and Name  
Plates, Experimental Work, etc

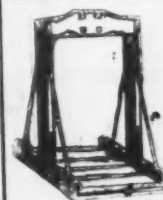
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ENGRAVER AND DIE SINKER.  
61 FULTON ST., N. Y.  
**STEEL STAMPS,**  
Steel Letters and Figures.  
Burning Brands, Stencils &  
MACHINE ROUTING FOR  
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THE Tain-  
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tive Saw  
Set 93 has every good  
point possessed by any  
other saw set, besides a  
number  
peculiar to  
itself.

TAINTOR  
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made to be sold by the Hard-  
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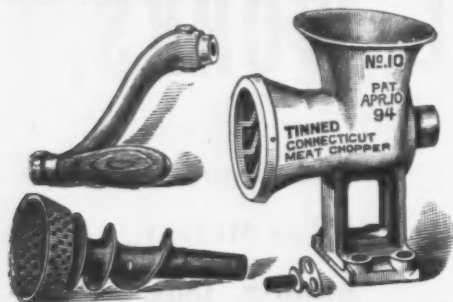
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SCHWEDTLE & SIEBERT,  
STENCILS-BURNING BRANDS  
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SEALS-MACH PLATES-CHECKS  
BRIDGEPORT, CONN.



## CONNECTICUT MEAT CHOPPERS

## THE NEW CONNECTICUT CHOPS and PULVERIZES.



ONLY  
TWO  
PARTS  
TO  
CLEAN

In three sizes, 8, 10, 12. For Butchers, Marketmen, Farmers, Poultry Breeders, Hotels, Restaurants and Public Institutions. For smaller sizes order "THE NEW CONNECTICUT," No. 20, 40, 60.

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Direct Representatives,  
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Housekeepers can now DO IT ALL with a - - SINGLE MACHINE.



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Vegetables  
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CLAMS,  
HASH, ETC.

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No. 1.



PEANUT BUTTER  
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No. 3.



COCOANUT,  
CRACKERS, ETC.

ONLY TWO PARTS TO CLEAN.

Manufactured by

O. D. WOODRUFF,  
Pottstown, Pa.



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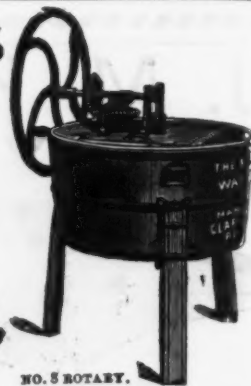
## The Peoria Washers

are the strongest, best made machines for the purpose on the market to-day. They have Cedar Tubs with Galvanized Hoops. Inside castings, Tinned Malleable Iron. Leg brackets, malleable iron and bolted to tub with Tinned Bolts. Will wash as well as by hand, with less than  $\frac{1}{4}$  the labor.

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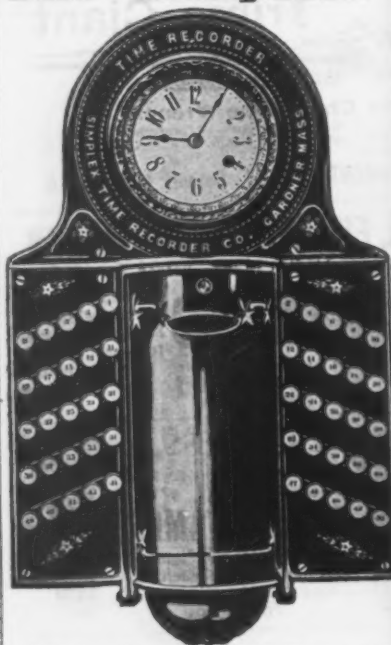
CLARK, QUIEN & MORSE,

402 S. WASH. ST., PEORIA, ILL.



NO. 5 ROTARY.

## The "Simplex"



S. W. CARD MFG. CO., Mansfield, Mass., say of it, "Giving perfect satisfaction and in our opinion is superior to anything we ever saw in the way of a time recorder."

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**SIMPLEX TIME RECORDER CO.,**  
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(Successors to Time Recorder Dept. of Heywood Bros. & Wakefield Co.)

272 Wabash Ave., Chicago, Ill.  
N. E. Agents, Moore & Booth, 170 Summer St.  
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BIGELOW  
WIRE FLY KILLER.

The original and up-to-date Fly Killer on the market. It has no equal. Flies cannot escape it. Will not crush, coil or mar the most delicate wall paper or ceiling.

A Quick Seller. Good Profits. Trade sample on application.

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Patented Jan 8, 1895.



## The Ideal Food Cutter.

CUTS EVERYTHING EDIBLE.

CUTS FINE OR COARSE JUST AS NEEDED.

Cutting Parts are of Tempered Steel.

All Parts can be Duplicated.

THE MOST SATISFACTORY FAMILY  
MEAT AND FOOD CUTTER EVER  
MADE

MANUFACTURED BY

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The Ideal Receipt Book Free upon  
Application.



## IMPROVED

## Young America Scale.

It is Made of Steel. White Tile Top. Tin or  
Brass Scoop Top. Brass Dial.

**BEST IN THE WORLD.**

A most beautiful and attractive scale for all purposes. Beautifully enameled, ornamented and striped. Weighs 20 pounds by ounces. Occupies but little space. Is light and easily moved. It can be regulated by turning the brass screw on top. It is always readily and easily understood. It is a convenient scale to use and has no weights that may be lost. You can look this one in the face to prove its accuracy without looking for weights. Every scale examined before leaving the factory and warranted correct.

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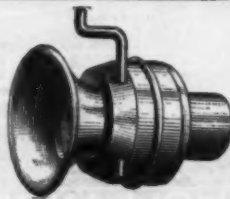
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22 DEY STREET, NEW YORK.

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Speaking Tubes, Whistles, Oral, Electric, Mechanical and Pneumatic Annunciators and Bells.

Complete outfits of Speaking Tubes, Whistles, Electric, Mechanical, and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, N. Y.



# "ENTERPRISE" Meat and Food Choppers

**TINNED**

*Made in 35 Sizes and Styles for Hand and Power*

*From \$1.00 to \$275.00*

They have always given satisfaction and will continue  
so to do

Trade Mark "ENTERPRISE" on a machine is  
a Guarantee of its Quality

Insist on your Jobber supplying

"ENTERPRISE" CHOPPERS

Descriptive Catalogue FREE

*The Enterprise Mfg. Co. of Pa.*

*Philadelphia, Pa., U. S. A.*

*N. Y. Branch, 10 Warren St.*

*San Francisco Branch, 105 Front St.*



No. 2, - - \$1 50  
Chops 1 lb. per minute



No. 5, - - \$2.00  
Chops 1½ lbs. per minute



No. 12, - - \$2 50  
Chops 3 lbs. per minute



## S & B GALVANIZED and CORRUGATED WASH TUBS.

(PATENT APPLIED FOR).

**Strongest, Best and Most Handsome  
Wash Tub Made.**

NO BUCKLING OR BENDING.

CORRUGATED ON BOTH SIDES AND BOTTOM.

SIDES MAY BE USED AS A WASH BOARD.

We make all descriptions of Pieced, Heavy Polished, Stamped, Japanned  
and Gray Flint Enameled Ware.

MANUFACTURED SOLELY BY

Main Office and Salesroom, 16 West Baltimore St., Baltimore, Md.

New York Salesroom, 51 Cliff St.

Philadelphia Salesroom, 116 Market Street.

Chicago Salesroom, 1115 Chamber of Commerce.

San Francisco Salesroom, 123 California Street.

Number	0	1	2	3
Diameter at top, inches,	30 $\frac{3}{4}$	21 $\frac{1}{4}$	23 $\frac{3}{4}$	24 $\frac{3}{4}$
Diameter at bottom, inches,	16 $\frac{1}{4}$	15	19 $\frac{1}{4}$	21
Capacity, quarts,	45	52	62	71

WRITE FOR PRICES.

**KEEN & HAGERTY MFG. CO.**

## The Sterling Chopper

AND

## The Sterling Slicer.

TWO UNEQUALED KITCHEN TOOLS.

*Have you seen the slicer? It's just out.*

**N. R. STREETER & CO.,**

ROCHESTER, N. Y.







We want your order now...if it is only a small trial order to begin with... and we know it will prove to you that our products are the best and most satisfactory sellers. Send to us for free samples of wares and catalogue.

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While we know that our wares are the best on the market for design, finish and durability, and that our price is always consistent, we nevertheless are spending thousands of dollars acquainting the buying public with their trade-names, thereby assisting you in making sales. You must recognize this fact, and to protect yourself you must carry a complete line of our make of goods.

We deserve your patronage and good will because our wares are the best for the money and the because we are doing most good for you. We are making the following wares household names and you cannot afford to be without them...this is not sentiment but sound business:

**AMETHYST, DRESDEN,  
COPENHAGEN, COLUMBIAN.**



TRIPLE COATED ENAMELED WARES.

Send to us for free samples of wares  
**BELLAIRE STAMPING CO., HARVEY, ILLINOIS.**



Is unquestionably the best machine of its kind ever offered to the public. It will cut without crushing raw or cooked meat, sea food, fruit, vegetables, etc., into coarse or fine pieces, according to the cutter used, of which three accompany each chopper.

It has eliminated all the objectionable features of other choppers and has added several improvements that are distinctly its own. It is always in order and the knives require no sharpening.

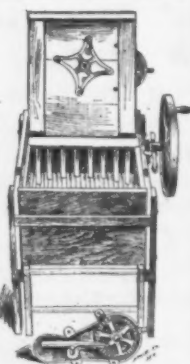
An additional and exclusive feature of the **Star Food Chopper** is a plate hinged at the top of the hopper which, when pressed on the food to be cut, forces it upon the feed screw, thus preventing the possibility of injuring or soiling the fingers, which is liable to occur in using other choppers.

For sale by all dealers.

**CHAS. D. BROWN, Sole Agent,**  
160 Duane Street, New York City.

### THE NEW WESTERN ROTARY.

No complicated gearing to get out of order or broken. Simply one large pinion fastened on the shell or cover; one small pinion attached to the post; another small pinion meshing in the large one attached to shaft, and the Rack Bar; that's all. Washer operates right or left, the large hand wheel is attached to side of tub, does not have to be lifted with the cover; when latter is down it is always ready for business.



THE ANTHONY WAYNE MFG. CO., Ft. Wayne, Ind.



For Sale by all  
Jobbers.

Packed:  
5 Gross  
in a case.

THE  
**J. R. CLARK CO.,**  
Sole Mfrs.,  
MINNEAPOLIS.  
MINN.

## Aluminum Oil Heaters.

# 235,000 IN USE.

**NOVELTY MANUFACTURING CO.,**  
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**The CHAS. PARKER CO., Meriden, Conn.,**  
and 82 Warren St., New York.

## COFFEE MILLS.

Large Variety of  
Styles and Sizes.



We make

VICES,  
SPOONS,  
KNIVES,  
FORKS,  
THE  
PARKER  
GUN.

WOOD  
SCREWS,  
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## THE LARGEST LINE OF SAD IRONS

OF ALL SIZES AND KINDS

Made by any one Manufacturer in the World

ARE MANUFACTURED BY

**A. C. WILLIAMS,**

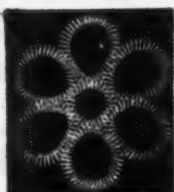
RAVENNA, OHIO, U. S. A.

Over 2,000,000 made and sold in 1899.

To whom send for catalogue of

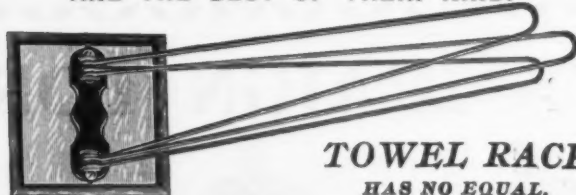
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Hardware.

SURPLESS, DUNN & CO., 55 Warren St., New York,  
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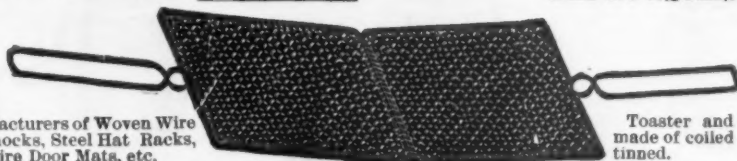


Tea or Coffee Pot Stand, one  
piece of wire, retinned.

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**TOWEL RACK.**  
HAS NO EQUAL.



Manufacturers of Woven Wire  
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Toaster and Broiler,  
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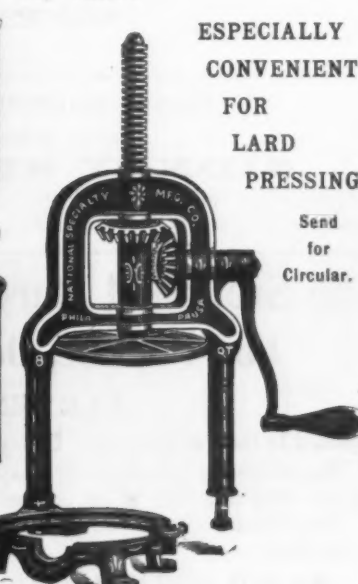
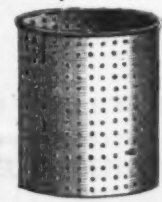
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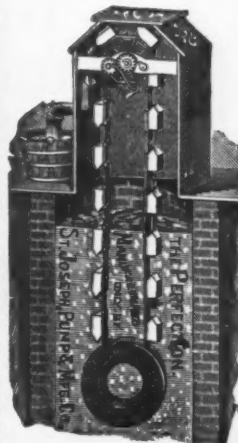


ESPECIALLY  
CONVENIENT  
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Sell your  
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something  
that sets water  
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know a good  
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Write for sample outfit to-day.  
Catalog free.

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Easy Running. Simple. Made of  
Selected Virginia White Cedar.  
Welded Wire Hoops.

Richmond Cedar Works,  
Manufacturers of Wooden Ware,  
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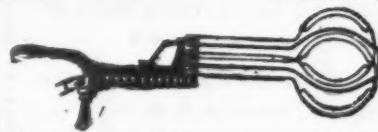
## CHAMPION EGG OPENER.



A perfect work-  
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used never with-  
out. Gives perfect  
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daubing or pieces  
of shell by using  
this Egg Opener.  
No competition;  
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Nickel Plate, 25c.;  
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Send for discount  
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EGG BEATERS. We make the largest line in the world. Send  
for samples and prices. STANDARD CO.  
107 Haverhill St.,  
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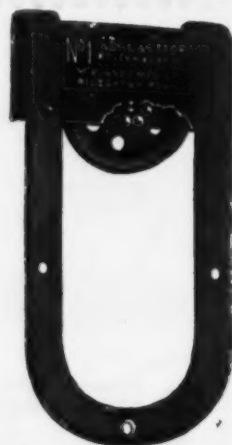


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Door Hangers,  
Door Track and Stay Rollers,  
Door Hinges and Butts,  
Felloe Plates and Washers,  
Warehouse Trucks and Specialties.

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**D**O YOU know what a Poised Carrier is? If not, buy and sell the Coburn Rolling Door Hangers and you will get them, and you do not get them with any other make. They will when used in conjunction with the Coburn Round Trough Trolley Track be found to be the "*Ne Plus Ultra*" in door hangers.

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**THE OGDEN**

**Automatically Regulated**

Liquid Door Check and Spring.



Easily Applied.

Positively Regulated.

Refilled Without Removing.

Cannot Leak.

The ONLY Check that FULLY controls the Door.

FULL DESCRIPTIVE CATALOGUE.

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**WHITE  
MOUNTAIN  
FREEZER**

The Standard of Excellence Everywhere  
SOLD BY ALL LEADING JOBBERS.

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**THE WHITE MOUNTAIN FREEZER CO.,**  
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Quickest  
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Best  
Results

Economical  
Durable

## CAMPAIGN TORCHES



Made with the patented double swing, which keeps the torch always right side up. In ordering, state if wanted with or without sticks.

## BLOW HORNS.



4, 11 or 14 inches long, plain tin or lacquered.

**RUSH ORDERS FILLED PROMPTLY.**

Write to Our House Nearest You.

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- No. 6, MALLEABLE HARDWARE.

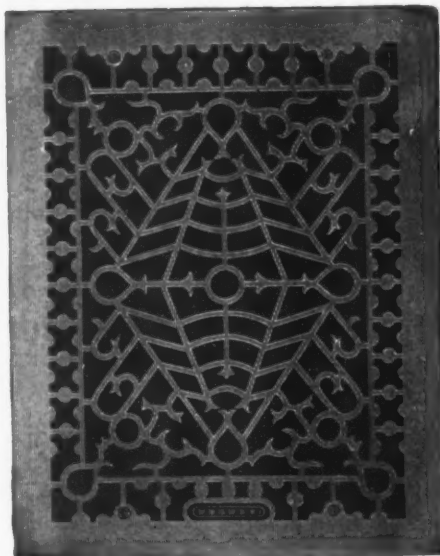
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Hot Air  
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STANDARD  
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All Sizes in Stock.



# You'll Have to Hurry

and order SHELBY SPRING HINGES soon. They  
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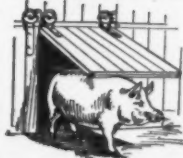
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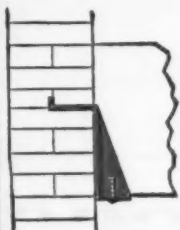


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Mechanically perfect yet simple in construction. 3 1/4 inch wheels.  
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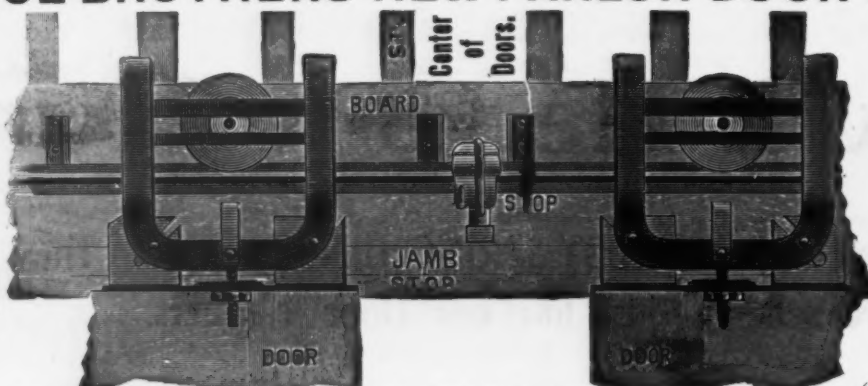
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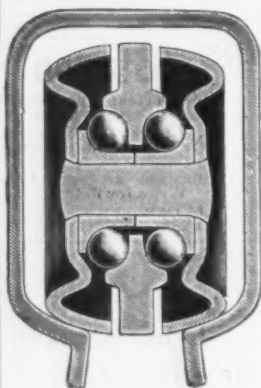
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Square and  
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Hang exactly  
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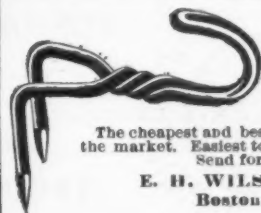
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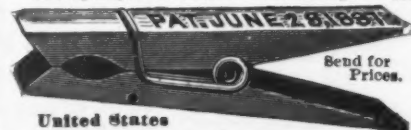
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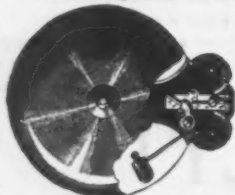


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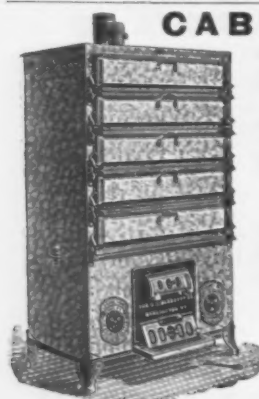
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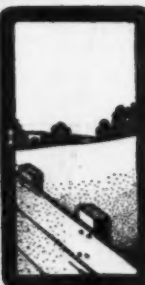
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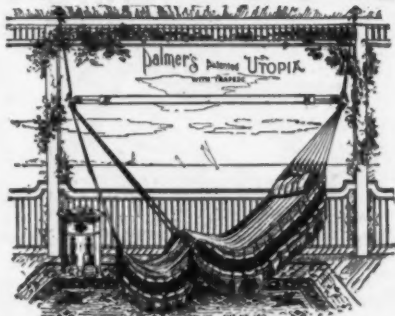
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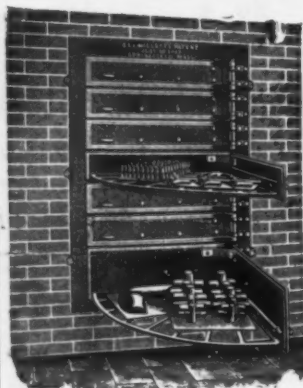
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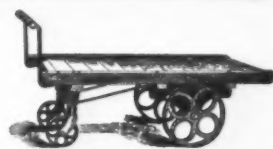
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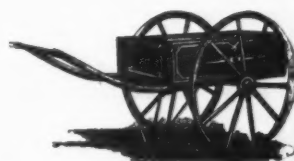
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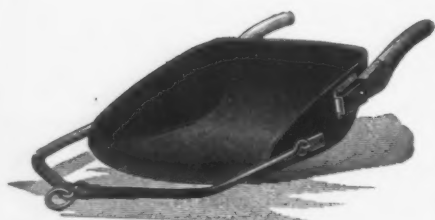
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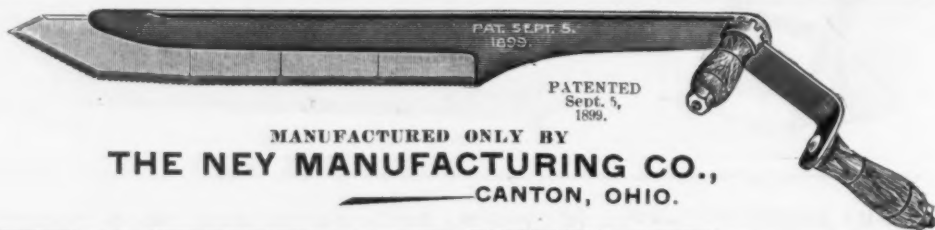
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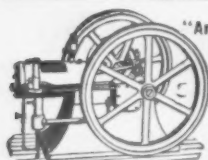
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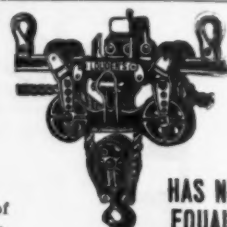
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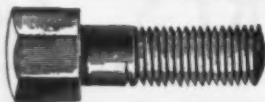


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Green, A. H. &amp; Co., 22 Park Place, N. Y.

Jones, Jesse, Paper Box Co., Phila., Pa.

Moore, C. P., Ravenswood, W. Va.

**Brackets, Shelf**

Atlas Mfg. Co., New Haven, Conn.

Griffin Mfg. Co., Allegheny, Pa.

Stowell Mfg. &amp; Fdry. Co., Chicago, Ill.

**Brass and Copper**

Ansonia Brass &amp; Copper Co., 99 John St., N. Y.

Bridgeport Brass Co., Bridgeport, Ct.

Daval, John &amp; Sons, 100 John, N. Y.

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

Plume &amp; Atwood Mfg. Co., 29 Murray St., N. Y.

Randolph-Cloves Co., Waterbury, Conn.

Rutter, A. T., 256 Broadway, N. Y.

Scoville Mfg. Co., Waterbury, Conn.

Shimer, H. M. &amp; Co., Phila., Pa.

Waterbury Brass Co., 60 Centre St., N. Y.

**Brass and Copper Rods**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Brass and Copper Wire**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Brass Butt Hinges**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

Tiebout, W. &amp; J., 115 Chambers

**Brass Butts**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Brass Foundries**

Cramp, Wm. &amp; Sons S. &amp; E. B. Co., Philadelphia, Pa.

Reeves, Paul S., Philadelphia, Pa.

Ryan, J. J. &amp; Co., Chicago, Ill.

**Brass Goods**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Brass and Iron Jack Chains**

Hungerford, U. T., Brass &amp; Copper Co., 121 Worth St., N. Y.

**Breast Drills**

Miller's Falls Co., 38 Warren St., N. Y.

**Bridge Builders**

American Bridge Co., East Berlin, Ct.

Boston Bridge Works, Boston, Mass.

Easter Bridge &amp; Structural Co., Worcester, Mass.

Illinois Steel Co., Chicago, Ill.

New England Structural Co., Boston, Mass.

Scaife, Wm. R. &amp; Sons, Pittsburgh.

**Bronze Ingots**

Syracuse Smelting Wks., Syracuse, N. Y.

**Bronze, Manganese**

Cramp, Wm. &amp; Sons S. &amp; E. B. Co., Philadelphia, Pa.

**Bronze, Tin**

Ansonia Brass &amp; Copper Co., 99 John St., N. Y.

**Brooms and Brushes**

Osborn Mfg. Co., Cleveland, O.

**Buffing Wheels**

Divine Bros. Co., Utica, N. Y.

**Buggies**

Parry Mfg. Co., Indianapolis



- Jenkins Iron & Tool Co.,** Howard, Pa.  
**Link-Belt Engineering Co.,** Phila., Pa.  
**McKay Jaa. & Co.,** Pittsburgh, Pa.  
**Nicholson & Co.,** Pittsburgh, Pa.  
**Onelda Community, Ltd.,** Niagara Falls  
**Standard Chain Co.,** Pittsburgh, Pa.
- Chain Plants**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
- Chemicals**  
 Fimer & Amend, New York.
- Cherry Stoners.**  
 Enterprize Mfg. Co., Philadelphia, Pa.  
 Goodell Co., Antrim, N. H.
- Chisels**  
 Buck Bros., Millbury, Mass.  
 Buck, Chas., Millbury, Mass.  
 Jennings, C. J. Co., 101 Reade St., N. Y.  
 White, L. & I. J. Co., Buffalo, N. Y.
- Christmas Tree Holders**  
 North Bros. Mfg. Co., Philadelphia, Pa.
- Chucks**  
 Cushman Chuck Co., Hartford, Conn.  
 Doebler Mfg. Co., Middletown, Conn.  
 Goodell Pratt Co., Greenfield, Mass.  
 Hoxson & Pettie Mfg. Co., New Haven.  
 Holland Mfg. Co., Erie, Pa.  
 Horton, E. & Son Co., Windsor Locks, Ct.  
 Ideal Machine Works, Hartford, Conn.  
 Pratt Chuck Co., Frankfort, N. Y.  
 Skinner Chuck Co., New Britain, Conn.  
 Standard Tool Co., Cleveland, O.  
 Union Mfg. Co., 108 Chambers, N. Y.  
 Whiton, D. E. Mach. Co., New London.
- Cider Mills**  
 Whitburn, R. W. & Co., Norfolk, Va.
- Circular Sawing Machines**  
 Kidder, R. E., Worcester, Mass.
- Clamps**  
 Besley, C. H. & Co., Chicago, Ill.  
 Hall, Thos., Brooklyn, N. Y.  
 Hammer & Co., Branford, Conn.
- Clipping Machines**  
 Amer. Shearer Mfg. Co., Nashua, N. H.  
 Chicago Flexible Shaft Co., Chicago, Ill.  
 McCoy, Jos. F. Co., 36 Warren St., N. Y.  
 Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.
- Clothes Dryers**  
 Hill Dryer Co., Worcester, Mass.
- Clothes Line Hook**  
 Wilson, E. H. & Co., Allston, Mass.
- Clothes Pins**  
 Clark, J. R. Co., Minneapolis, Minn.  
 U. S. Clothes Pin Co., Montpelier, Vt.
- Coal**  
 Alabama Consolidated Coal & Iron Co., Birmingham, Ala.  
 Sloss Sheffield Steel & Iron Co., Birmingham, Ala.  
 Washington Coal & Coke Co., Dawson, Pa.  
 Wister, Francis, Philadelphia, Pa.
- Coal Cars**  
 Lansing Wheelbarrow Co., Lansing, Mich.
- Coal Picks**  
 Jenkins Iron & Tool Co., Howard, Pa.
- Coal Shutes**  
 Lansing Wheelbarrow Co., Lansing, Mich.
- Coffee and Spice Mills**  
 Arcade Mfg. Co., Freeport, Ill.  
 Parker, Chas. Co., Meriden, Conn.
- Coke**  
 Alabama Consolidated Coal & Iron Co., Birmingham, Ala.  
 Bessemer Coke Co., Pittsburgh, Pa.  
 Cherry Valley Iron Co., Pittsburgh, Pa.  
 Dimmick, J. K. & Co., Phila., Pa.  
 Frick, H. C. Coke Co., Pittsburgh, Pa.  
 Houston, C. B. & Co., Philadelphia, Pa.  
 Sloss Sheffield Steel & Iron Co., Birmingham, Ala.  
 Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
 Virginia Iron, Coal & Coke Co., Bristol, Va., Tenn.  
 Washington Coal & Coke Co., Dawson, Pa.  
 Wister, Francis, Philadelphia, Pa.
- Compressed Air Machinery**  
 Phila. Pneumatic Tool Co., Phila., Pa.
- Conductor Pipe**  
 Berger Bros. Co., Philadelphia, Pa.
- Conveying Machinery**  
 Aultman Co., Canton, Ohio.  
 Brown Hoisting Machinery Co., Cleveland, Ohio.  
 California Wire Works, San Francisco.  
 Du Bois Iron Works, Du Bois, Pa.  
 Hunt, C. W. Co., New Brighton, N. Y.  
 Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Engineering Co., Phila., Pa.
- Cooking Utensils**  
 Cleveland Stamping & Tool Co., Cleveland, O.
- Coping Saw**  
 Jones & Dummerman, Chicago, Ill.
- Copper**  
 Hendricks Bros., 49 Cliff, N. Y.  
 Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
 United Metals Selling Co., 11 Broadway, N. Y.
- Copper Hammers**  
 Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Copper Hives and Bars**  
 Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Copper Tacks and Nails**  
 Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Cordage**  
 Macomber & White Rose Co., Chicago.  
 Samson Cordage Works, Boston, Mass.  
 Silver Lake Co., Boston, Mass.
- Core Ovens**  
 Millet Core Oven Co., Brightwood, Mass.
- Cork Screws and Cork Pullers**  
 Erie Specialty Co., Erie, Pa.
- Corn Hooks**  
 Withington & Cooley Mfg. Co., Jackson, Mich.
- Corn Huskers**  
 Wilcox Mfg. Co., Aurora, Ill.
- Corrugated Iron and Steel**  
 Garry Iron & Steel Roofing Co., Cleveland, O.  
 McCullough Iron Co., Wilmington, Del.  
 Scaife, Wm. B. & Sons, Pittsburgh.
- Cotter Pin Machines, Automatic**  
 Shuster, F. B. Co., New Haven, Conn.
- Cotton Ties**  
 American Steel Hoop Co., Battery Park Building, N. Y.
- Counting Machines**  
 Durant, W. N. Milwaukee, Wis.  
 Hart, R. A., Battle Creek, Mich.
- Couplings, Compression**  
 Bennett, Geo. B. Co., Youngstown, O.
- Cow Ties**  
 Onelda Community, Ltd., Niagara Falls, Pa.
- Cranes**  
 Brown Hoisting Machinery Co., Cleveland, Ohio.  
 Chisholm & Moore Mfg. Co., Cleveland.  
 Cleveland Crane & Car Co., Cleveland, O.  
 Niles Tool Works Co., 136-138 Liberty St., N. Y.  
 Northern Engineering Works, Detroit, Mich.  
 Pawling & Harnischfeger, Milwaukee, Wis.  
 Pneumatic Crane Co., Pittsburgh, Pa.  
 Reading Crane & Hoist Wks., Reading, Pa.  
 Ridgway, Craig & Son Co., Coatesville, Pa.  
 Spindel, J. G., Reading, Pa.
- Crayon**  
 Steward, D. M. Mfg. Co., Chattanooga, Tenn.
- Crucibles**  
 Dixon, Jos. Crucible Co., Jersey City, N. J.
- Cupolas**  
 Northern Engineering Works, Detroit.  
 Paxson, J. W. Co., Philadelphia, Pa.
- Curry Combs**  
 New York Stamping Co., Brooklyn, N. Y.
- Cutlery**  
 Cattaraugus Cutlery Co., Little Valley, N. Y.  
 Chastillon, John & Sons, 85 to 89 Cliff St., N. Y.  
 Dame, Stoddard & Co., Boston.  
 Goodell Co., Antrim, N. H.  
 Kimball, C. J. Co., Bennington, N. H.  
 Wiebusch & Hilger, Ltd., 9 to 15 Murray St., N. Y.
- Cutting Off Machines**  
 Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
- Cylinders, Air and Gas**  
 Harrisburg Pipe Bending Co., Harrisburg, Pa.
- Dampers**  
 Logan & Strobbridge Iron Co., New Brighton, Pa.  
 Williams, A. C., Ravenna, O.
- Diamond Tools**  
 Dickinson, Thos. L., 45 Vesey St., N. Y.
- Dies**  
 Adriance Mach. Works, Brooklyn, N. Y.  
 Bliss, E. W. Co., Brooklyn, N. Y.  
 Ferracute Mach. Co., Bridgeton, N. J.  
 Hay-Budden Mfg. Co., Brooklyn, N. Y.  
 Mossberg, Frank Co., Attleboro, Mass.  
 Richard Mfg. Co., Bloomsburg, Pa.  
 Wilson & Smith, Worcester, Mass.
- Door Bells.—See Bells and Gong.**
- Door Checks and Springs**  
 Bardsley, Jos., 147 151 Baxter St., N. Y.  
 Ogden Mfg. Co., Newark, N. J.  
 Fullman Sash Balance Co., Rochester, N. Y.
- Door Holders**  
 Caldwell Mfg. Co., Rochester, N. Y.
- Draught Springs**  
 Burditt & Williams, Boston, Mass.
- Draw Benches**  
 Richard Mfg. Co., Bloomsburg, Pa.  
 Thompson, Hugh L., Waterbury, Ct.
- Drill Grinders**  
 Heald, L. S. & Son, Barre, Mass.  
 Sellers, Wm. & Co., Inc., Phila., Pa.  
 Washburn Shops of Worcester Polytechnic Inst., Worcester, Mass.
- Drilling Machines**  
 Barnes, R. F. Co., Rockford, Ill.  
 Barnes, W. F. & John Co., Rockford, Ill.  
 Baush Mach. Tool Co., Springfield, Mass.  
 Bickford Drill & Tool Co., Cin., Ohio.  
 Bullard Machine Tool Co., Bridgeport, Ct.  
 Burnham, Geo. Co., Worcester, Mass.  
 Champion Blower & Forge Co., Lancaster, Pa.  
 Cincinnati Mch. Tool Co., Cincinnati, O.  
 Dallett, Thos. H. & Co., Philadelphia.  
 D'Amour & Littledale Mch. Co., 131 Worth St., N. Y.  
 Davis, W. P., Machine Co., Rochester, N. Y.  
 Detrick & Harvey Mch. Co., Baltimore, Md.  
 Fostick & Holloway Mach. Tool Co., Cincinnati, O.  
 Harrington, E. Son & Co., Phila., Pa.  
 Hill, Clarke & Co., Boston, Mass.  
 Hoefer Mfg. Co., Freeport, Ill.  
 Niles Tool Works Co., 136-138 Liberty St., N. Y.  
 Prentice Bros., Worcester, Mass.  
 Quinn, A. D., Hartford, Conn.  
 Shuster, F. B. Co., New Haven, Conn.  
 Shibley & Ware, So. Bend, Ind.  
 Sigourney Tool Co., Hartford, Conn.  
 Silver Mfg. Co., Salem, O.  
 Slate Dwight Machine Co., Hartford, Ct.  
 Stow Flexible Shaft Co., Phila., Pa.  
 Wiley & Russell Mfg. Co., Greenfield, Mass.  
 York, S. M. Co., Cleveland, O.
- Drilling Machines, Automatic**  
 Gould & Eberhardt, Newark, N. J.
- Drive Chains**  
 Locke Steel Belt Co., Bridgeport, Conn.
- Drop Forgings**  
 Belden Machine Co., New Haven, Conn.  
 Billings & Spencer Co., Hartford, Conn.  
 Chicago Drop Forging & Fdry. Co., Kensington, Ill.  
 Clapp, E. D. Mfg. Co., Auburn, N. Y.  
 Consolidated Railway Electric Lighting & Equipment Co., 100 Broadway, N. Y.  
 Eccles, Richard, Auburn, N. Y.  
 General Forging Co., Ronton, N. J.  
 Indianapolis Drop Forging Co., Indianapolis, Ind.  
 Keystone Drop Forge Co., Philadelphia.  
 Kilborn & Bishop Co., New Haven, Conn.  
 R. I. Tool Co., Providence, R. I.  
 Scranton Forging Co., Scranton, Pa.  
 Seward, M. & Son Co., New Haven, Ct.  
 Springfield Drop Forging Co., Springfield, Mass.  
 Strieby & Foote Co., Newark, N. J.  
 Transue & Williams Co., Alliance, O.  
 Williams, J. H. & Co., Brooklyn, N. Y.  
 Wyman & Gordon, Worcester, Mass.
- Drop Hammers**  
 Billings & Spencer Co., Hartford, Conn.  
 Merrill Bros., Brooklyn, N. Y.  
 Williams, White & Co., Moline, Ill.
- Drop Presses**  
 Manville, E. J. Mch. Co., Waterbury, Ct.  
 Miner & Peck Mfg. Co., New Haven, Ct.  
 Mossberg & Granville Mfg. Co., Providence, R. I.  
 Vulcan Iron Works, Chicago, Ill.
- Dumb Waiters**  
 Energy Elevator Co., Philadelphia, Pa.  
 Spindel, J. G., Reading, Pa.  
 Storm Mfg. Co., Newark, N. J.  
 Variety Machine Co., Warsaw, N. Y.
- Dump Cars**  
 Atlas Bolt & Screw Co., Cleveland, O.
- Dynamos**  
 Eddy Electric Mfg. Co., Windsor, Conn.  
 General Electric Co., Schenectady, N. Y.  
 New England Motor Co., Lowell, Mass.  
 Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
- Eave Troughs**  
 Kanneberg Rfg. Co., Canton, O.
- Eave Trough Hangers**  
 Berger Bros. Co., Philadelphia, Pa.  
 Oatman Bros., Medina, O.
- Edge Tools**  
 Buck, Chas., Millbury, Mass.  
 Buck Bros., Millbury, Mass.  
 Ferro-Carbon Castings Co., Phila., Pa.  
 White, L. & I. J. Co., Buffalo, N. Y.
- Egg Beaters**  
 Lyon, Nelson, Albany, N. Y.  
 Standard Co., Boston, Mass.
- Egg Opener**  
 Hartigan, W. R., Collinsville, Ct.
- Electric Bells and Supplies**  
 Oetrandor, W. R. & Co., 204 Fulton St.
- Electric Lighting and Power Apparatus**  
 Eddy Electric Mfg. Co., Windsor, Conn.  
 General Electric Co., Schenectady, N. Y.
- Electrical Apparatus**  
 Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
- Elevators, Makers of**  
 Eastern Machinery Co., New Haven, Ct.  
 Energy Elevator Co., Philadelphia, Pa.  
 Link-Belt Engineering Co., Phila., Pa.  
 Morse, Williams & Co., Phila., Pa.  
 Ridgway, Craig & Son Co., Coatesville, Pa.  
 Spindel, J. G., Reading, Pa.  
 Variety Machine Co., Warsaw, N. Y.
- Elevator Buckets**  
 Clark, W. J. & Co., Salem, O.  
 Cleveland Elevator Bucket Co., Cleveland, O.
- Elevator Enclosures and Cabs**  
 Ludlow Saylor Wire Co., St. Louis, Mo.
- Emery**  
 Tanite Co., Stroudsburg, Pa.
- Emery Wheels**  
 American Emery Wheel Works, Providence, R. I.  
 Best, L., 45 Vesey St., N. Y.  
 Bridgeport Safety Emery Wheel Co., Bridgeport, Conn.  
 Buffalo Emery Wheel Co., Buffalo, N. Y.  
 Nazel, John, Phila., Pa.  
 Northampton Emery Wheel Co., Leeds, Mass.  
 Norton Emery Wheel Co., Worcester, Mass.  
 Safety Emery Wheel Co., Springfield, O.  
 Springfield Mfg. Co., Bridgeport, Conn.  
 Sterling Emery Wheel Co., Tiffin, O.  
 Tanite Co., Stroudsburg, Pa.  
 Vitrifred Emery Wheel Co., Westfield, Mass.
- Emery Wheel Dresser**  
 Chicago Screw Co., Chicago, Ill.  
 Dickinson, Thos. L., 45 Vesey St., N. Y.
- Enameled Ware**  
 Bellwire Stamping Co., Harvey, Ill.
- Engineers and Contractors**  
 Aiken, Henry, Pittsburgh, Pa.  
 Erickson, Edw. E., Pittsburgh, Pa.  
 Filer & Stowell Co., Milwaukee, Wis.  
 Forter-Miller Engineering Co., Pittsburgh, Pa.  
 Hevi & Patterson, Pittsburgh, Pa.  
 Huber, S. V. Co., Pittsburgh, Pa.  
 Kennedy, Julian, Pittsburgh, Pa.  
 Kennedy, Walter, Pittsburgh, Pa.  
 Lamond, David, Pittsburgh, Pa.  
 Laughlin, Alex. & Co., Pittsburgh, Pa.
- McClure, G. W. Son & Co.,** Pittsburgh.  
**Morgan Construction Co.,** Worcester, Mass.  
**Penna. Engineering Wks.,** New Castle, Penna.  
**Ritter-Conley Mfg. Co.,** Pittsburgh, Pa.  
**Smythe, S. H. Co., Inc.,** Pittsburgh, Pa.  
**Swindle, W. & Bros.,** Pittsburgh, Pa.  
**Thompson, Hugh L.,** Waterbury, Ct.  
**Wellman Seaver Engineering Co.,** Cleveland, O.
- Engines**  
 Gas.  
 Mletz, Aug., 136-138 Mott St., N. Y.  
 Northern Engineering Works, Detroit, Mich.  
 Gasoline.  
 Charter Gas Engine Co., Sterling, Ill.  
 Stover Engine Works, Freeport, Ill.  
 Weber Gas & Gasoline Engine Co., Kansas City, Mo.  
 Watkins, F. M., Cincinnati, O.  
 Kerosene.  
 Mletz, Aug., 136-138 Mott St., N. Y.  
 Steam.  
 Allis, E. P. Co., Milwaukee, Wis.  
 Boston Blower Co., Hyde Park, Mass.  
 Buffalo Forge Co., Buffalo, N. Y.  
 Filer & Stowell Co., Milwaukee, Wis.  
 Newport News Shipbuilding & Dry Dock Co., 1 Broadway, N. Y.  
 Senneker Geo. B. Co., Youngstown, O.  
 Southwick Fdry. & Mch. Co., Philadelphia, Pa.  
 Sturtevant, B. F. Co., Boston, Mass.  
 Tod, William & Co., Youngstown, O.  
 Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.  
 Wetherill, Robt. & Co., Chester, Pa.
- Engines, Marine**  
 Lake City Engineering Co., Erie, Pa.
- Engines, Second Hand**  
 Everson, B. M., Pittsburgh, Pa.
- Engravers**  
 Muzford, A., Hartford, Conn.
- Expanding Mandrels**  
 LeCount, Wm. G., So. Norwalk, Conn.
- Expansion Bolts**  
 Church, Isaac, Toledo, O.  
 Evans, F. H., Brooklyn, N. Y.  
 McCabe Hanger Mfg. Co., 338-343 W. 23d St., N. Y.  
 Newhall, Henry B. Co., N. Y.  
 Seaman, D. C. & Co., Philadelphia, Pa.  
 Steward & Romaine Mfg. Co., Phila., Pa.
- Farriers' Tools.**  
 Champion Tool Co., Ltd., Conneaut Lake, Pa.  
 Heller Bros. & Co., Newark, N. J.
- Faucets**  
 McKenna Bros. Brass Co., Ltd., Pittsburgh, Pa.
- Faucets, Wooden**  
 Boston & Lockport Block Co., Boston.  
 Sommer's, John, Son, Newark, N. J.
- Feed Cutters**  
 Silver Mfg. Co., Salem, O.
- Feed Water Heaters and Purifiers**  
 Harrisburg Pipe Bending Co., Harrisburg, Pa.  
 Harrison Safety Boiler Works, Philadelphia, Pa.  
 Kelly, B. F. & Son, 91 Liberty St., N. Y.  
 National Pipe Bending Co., New Haven.  
 Patterson, F. L., 136 Liberty St., N. Y.  
 Taunton Locomotive Mfg. Co., Taunton, Mass.  
 Webster, Warren & Co., Camden, N. J.  
 Whitlock & Oil Pipe Co., Hartford, Ct.
- Fencing, Iron and Wire**  
 Adam, W. J., Joliet, Ill.  
 American Steel & Wire Co., Chicago, Ill.  
 Barnum, E. T., Detroit, Mich.  
 Berthe, A., Jersey City, N. J.  
 Clinton Wire Cloth Co., Clinton, Mass.  
 DeKalb Fence Co., DeKalb, Ill.  
 Drivings Wire Fence Co., Anderson, Ind.  
 Ellis & Halfenbarger, Indianapolis, Ind.  
 Frost Wire Fence Co., Cleveland, O.  
 Gilbert & Bennett Mfg. Co., 44 Cliff St.  
 Hartman Mfg. Co., 309 Broadway, N. Y.  
 Kilmer Wire Mfg. Co., Chicago, Ill.  
 Kokomo Fence Mch. Co., Kokomo, Ind.  
 Ludlow Saylor Wire Co., St. Louis, Mo.  
 Ornamental Iron & Wire Co., Chattanooga, Tenn.  
 Rossman Woven Wire Fence Co., Rossmann, N. Y.  
 Stewart Iron Works, Cincinnati, Ohio.  
 Up-to-date Mfg. Co., Terre Haute, Ind.
- Ferro-Chromium**  
 Wilson Aluminum Co., 99 Cedar Street, N. Y.
- Files and Raps**  
 Manufacturers of  
 Arcade File Works, Anderson, Ind.  
 Barnett, G. & H. Co., 41 & 43 Richmond Phila.  
 Diaston, Henry & Sons, Inc., Phila., Pa.  
 Heller Bros. Co., Newark, N. J.  
 McCaffrey File Co., Philadelphia.  
 Nicholson File Co., Providence, R. I.  
 Stokes Bros. Mfg. Co., Freehold, N. J.
- Filters**  
 Scaife, Wm. B. & Sons, Pittsburgh, Pa.
- Finished Castings**  
 Franklin, H. H. Mfg. Co., Syracuse.
- Fire Brick**  
 Borgner, Cyrus, Philadelphia, Pa.  
 Gardner Bros., Cumberland, Md.  
 Hawa, W. H. Fire Brick Co., Mt. Union, Maurer, H. & Son, 420 E. 23d, N. Y.  
 Oskander Fire Brick Co., Troy, N. Y.  
 Presbury Fire Brick Co., Taunton, Mass.  
 Valentine, M. D. & Bro. Co., Woodbridge.
- Fire Extinguishers**  
 International Sprinkler Co., Phila., Pa.

**Fishing Tackle**

Dame, Stoddard & Co., Boston, Mass.

**Flanged Fittings**

Latrobe Steel Co., Phila., Pa.

**Flexible Shafting**

Chicago Flexible Shaft Co., Chicago, Ill.  
Stow Flexible Shaft Co., Phila., Pa.  
Stow Mfg. Co., Binghamton, N. Y.

**Flint and Emery Paper**

Baeder, Adamson & Co., Phila., Pa.

**Floor and Ceiling Plates**

Codling Mfg. Co., Bristol, Conn.

**Flue Cleaners**

Jackson Flue Scraper Co., Jackson, N. Y.  
Jarecki Mfg. Co., Erie, Pa.

**Fly Killers**

Bigelow, J. F., Worcester, Mass.

**Foot Power Emery Wheels**

Buffalo Emery Wheel Co., Buffalo, N. Y.

**Foot Rests**

Star Heel Plate Co., Newark, N. J.

**Forges, Portable, &c.**

Bradley Co., Syracuse, N. Y.  
Champion Blower & Forge Co., Lancaster, Pa.  
Sturtevant, B. F. Co., Boston, Mass.

**Forgings, Iron and Steel**

Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.  
Bethlehem Steel Co., Bethlehem, Pa.  
Eastern Forge Co., Boston, Mass.  
Frankford Steel Co., Phila., Pa.  
Hay-Budden Mfg. Co., Brooklyn, N. Y.  
Otis Steel Co., Ltd., Cleveland, Ohio.  
Pittsburgh Shear, Knife & Machine Co., Pittsburgh, Pa.  
Titusville Forge Co., Titusville, Pa.  
U. S. Projectile Co., Brooklyn, N. Y.

**Forks, Hay and Manure**

Continental Tool Co., Frankfort, N. Y.  
Iowa Farming Tool Co., Ft. Madison, Ia.  
Withington & Cooley Mfg. Co., Jackson, N. Y.

**Foundry Facings**

Obermayer, S. Co., Cincinnati, O.

**Foundry Lamps**

Forest City Fdy. & Mfg. Co., Cleveland, Pa.  
Paxson, J. W. Co., Phila., Pa.

**Foundry Supplies**

Gilmour, J., Bennett Building, N. Y.  
Obermayer, S. Co., Cincinnati, Ohio.  
Osborn Mfg. Co., Cleveland, O.  
Paxson, J. W. Co., Phila., Pa.

**Friction Clutches**

Eastern Machinery Co., New Haven, Ct.  
Heas, Snyder & Co., Massillon, O.

**Furnaces, Oil, Gas and Coal**

Rockwell Engineering Co., 26 Cortlandt St., N. Y.

**Fuses**

Ensign Blackford & Co., Simsbury, Ct.

**Gages**

Crosby Steam Gage & Valve Co., Boston.

**Galvanized Ware**

Keen & Hagerty Mfg. Co., Baltimore.

**Galvanizing**

Blackman & King, 801 Greenwich St., N. Y.  
Empire Pipe Bending & Supply Co., Brooklyn, N. Y.

**Galvanizing Process**

U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

**Garden Rakes**

Cronk Hanger Co., Elmira, N. Y.  
Jenkins Iron & Tool Co., Howard, Pa.

**Garden Tools**

Withington & Cooley Mfg. Co., Jackson, N. Y.

**Gas Compressor**

Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

**Gas Compressors**

Norwalk Iron Works Co., So. Norwalk, Conn.

**Gas Furnaces**

Am. Gas Furnace Co., 23 John St., N. Y.  
Chicago Flexible Shaft Co., Chicago, Ill.

**Gaskets, Iron**

Smooth On Mfg. Co., Jersey City, N. J.

**Gas Producers**

Duff Patents Co., Allegheny, Pa.  
Smythe, S. R. Co., Inc., Pittsburgh, Pa.  
Swindell, D. E. & Bro., Pittsburgh, Pa.

**Gauges, Rolling Mill**

Haines Gauge Co., Philadelphia, Pa.

**Gears**

Boston Gear Works, Boston, Mass.  
Gleason Tool Co., Rochester, N. Y.  
Morse, Williams & Co., Phila., Pa.  
Nuttall, R. D. Co., Pittsburgh, Pa.  
Poole, Robt. Son & Co., Baltimore, Md.

**Gears, Rawhide**

Horsburgh & Scott, Cleveland, Ohio.

**Gear Cutters**

Becker Brainard Milling Machine Co., Hyde Park, Mass.  
Gould & Eberhardt, Newark, N. J.  
Whitton, D. E. Mch. Co., New London, Conn.

**Generators, Electric**

Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.

**Gimlets**

Norton Mfg. Co., Chester, Conn.

**Glass Cutters**

Barrett, W. L., Bristol, Conn.  
Bultman, F. H. & Co., Cleveland, O.  
Morse, S. G., Unionville, Conn.  
Smith & Hemenway Co., 294 Broadway, N. Y.

**Glass Cutting Boards**

Lufkin Rule Co., Saginaw, Mich.

**Glue**

Baeder, Adamson & Co., Phila., Pa.

**Golf Goods**

Bridge-ort Gun Implement Co., 312 Broadway, N. Y.

**Grates, Rocking**

Sennett, Geo. E. Co., Youngstown, O.

**Grease, Axle**

Snow Flake Axle Grease Co., Boston.

**Grinding and Polishing Mchs.**

American Emery Wheel Works, Providence, R. I.

**Grinding and Polishing Mchs.**

Barnes, W. F. & John Co., Rockford, Ill.

**Grinding and Polishing Mchs.**

Bealy, Chas. H. & Co., Chicago, Ill.

**Grinding and Polishing Mchs.**

Brown & Sharpe Mfg. Co., Providence, R. I.

**Grinding and Polishing Mchs.**

Builders Iron Foundry, Providence, R. I.

**Grinding and Polishing Mchs.**

Cincinnati Milling Mach. Co., Cincinnati, O.

**Grinding and Polishing Mchs.**

Landis Tool Co., Waynesboro, Pa.

**Grinding and Polishing Mchs.**

Northampton Emery Wheel Co., Leeds, Mass.

**Grinding and Polishing Mchs.**

Norton Emery Wheel Co., Worcester, Mass.

**Grinding and Polishing Mchs.**

Safety Emery Wheel Co., Springfield, O.

**Grinding and Polishing Mchs.**

Springfield Mfg. Co., Bridgeport, Conn.

**Grinding and Polishing Mchs.**

Tanite Co., Stroudsburg, Pa.

**Grinding and Polishing Mchs.**

Universal Mach. Co., Providence, R. I.

**Grindstones**

Cleveland Stone Co., Cleveland, O.

**Grabbing Machine**

New Century Mfg. Co., 43 E. 8th St., N. Y.

**Guns**

Harrington & Richardson Arms Co., Worcester, Mass.

**Guns**

Johnson, Iver Arms & Cycle Works, Fitchburg, Mass.

**Guns**

Marlin Fire Arms Co., New Haven, Ct.

**Guns**

Remington Arms Co., 315 Broadway, New York

**Hack Saws**

Diaston, Henry & Sons, Inc., Phila., Pa.

**Hack Saws**

Goodell-Pratt Co., Greenfield, Mass.

**Hack Saws**

Springfield Machine Screw Co., Springfield, Mass.

**Hack Saws**

Starrett, L. S. Co., Athol, Mass.

**Hammers**

Heller Bros. Co., Newark, N. J.

**Hammers**

Logan & Strobbridge Iron Co., New Brighton, Pa.

**Hammers**

Palmer, I. E., Middletown, Conn.

**Hammers**

Bicknell Hdw. Co., Janesville, Wis.

**Hand Milling Machines**

Costello, J. E. Machine Wks., Brooklyn, N. Y.

**Hand Screws**

Bliss, R. Mfg. Co., Pawtucket, R. I.

**Hand Screws**

McCabe Hanger Mfg. Co., 533-543 W. 23d St., N. Y.

**Hand Screws**

McKinney Mfg. Co., Allegheny, Pa.

**Hand Screws**

Ney Mfg. Co., Canton, Ohio.

**Hand Screws**

Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

**Hand Screws**

Wilcox Mfg. Co., Aurora, Ill.

**Hangers, Shafting**

Ball Bearing Co., Boston, Mass.

**Hangers, Shafting**

Dodge Mfg. Co., Mishawaka, Ind.

**Hardware Comm'n Merchants**

Graham, John H. & Co., 113 Chambers St., N. Y.

**Hardware Comm'n Merchants**

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

**Hardware Comm'n Merchants**

Hardware Jobbers, Phila., Pa.

**Hardware Manufacturers**

Arcade Mfg. Co., Freeport, Ill.

**Hardware Manufacturers**

Central Hardware Co., Phila.

**Hardware Manufacturers**

Logan & Strobbridge Iron Co., New Brighton, Pa.

**Hardware Manufacturers**

Millers Falls Co., 23 Warren St., N. Y.

**Hardware Manufacturers**

Ney Mfg. Co., Canton, Ohio.

**Hardware Manufacturers**

Nicol & Co., Chicago, Ill.

**Heating and Ventilating Apparatus**

American Blower Co., Detroit, Mich.

Bayley, Wm. & Sons Co., Milwaukee, Wis.

Boston Blower Co., Hyde Park, Mass.

Buffalo Forge Co., Buffalo, N. Y.

Persins, B. E. & Son, Holyoke, Mass.

Sturtevant, B. F. Co., Boston, Mass.

**Heel Plates**

Star Heel Plate Co., Newark, N. J.

**Hinges**

Jenkins Iron & Tool Co., Howard, Pa.

Lawrence Bros., Sterling, Ill.

McKinney Mfg. Co., Allegheny, Pa.

Stanley Works, New Britain, Conn.

Tiebout, W. J., 113 Chambers St., N. Y.

**Hitching Posts**

Hartman Mfg. Co., 309 Broadway, N. Y.

Hos, Garden, Planters', &c., Continental Tool Co., Frankfort, N. Y.

Iowa Farming Tool Co., Fort Madison, Iowa.

Jenkins Iron & Tool Co., Howard, Pa.

**Hoists, Air**

Pedrick & Ayer Co., Philadelphia, Pa.

Ridgway, Craig & Son Co., Coatesville, Pa.

Hoists, Chain and Rope

Rox, Alfred & Co., Philadelphia, Pa.

Eckstein, C. G., 249 Centre St., N. Y.

Fulton Iron & Engine Works, Detroit, Mich.

Harrington, E. Son & Co., Phila., Pa.

McCoy, Jos. F. & Co., 26 Warren St.

Reading Crane & Hoist Works, Reading, Pa.

Speidel, J. G., Reading, Pa.

**Hoisting Machines**

Eastern Machinery Co., New Haven, Ct.

Lidgerwood Mfg. Co., 96 Liberty St., N. Y.

**Hollow Mill**

Geometric Drill Co., Westville, Conn.

**Hollow Ware**

Avery Stampings Co., Cleveland, Ohio.

Cleveland Stamping & Tool Co., Cleveland, O.

New York Stamping Co., Brooklyn, N. Y.

Rogers, Jno. M. Hoist-Gauge & Drill Works, Gloucester, City, N. J.

**Horns**

Shepard, Sidney & Co., Buffalo, N. Y.

**Horse Nails**

Capewell Horse Nail Co., Hartford, Ct.

Mooney, W. M. & Co., Ausable Chasm, N. Y.

National Horse Nail Co., Vergennes, Vt.

Putnam Nail Co., Neponset, Boston.

Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

**Horse and Mule Shoes**

American Steel & Wire Co., Chicago, Ill.

Burden Iron Co., Troy, N. Y.

Hollow Grip Horse Shoe Co., Chicago.

Phoenix Horse Shoe Co., Poughkeepsie, Rhode Island Perkins Horse Shoe Co., Providence, R. I.

**Hose**

Boston Belting Co., Boston, Mass.

Peerless Rubber Mfg. Co., 16 Warren Street, New York.

**Hose Couplings**

Clark, W. J. & Co., Salem, Ohio.

**Hose Coupling, Air**

Pedrick & Ayer Co., Philadelphia, Pa.

**Hose Washers**

Campbell, H. O., Bridgeport, Conn.

**House Furnishing Specialties**

Lloyd Mfg. Co., Minneapolis, Minn.

Williams, A. C. Ravenna, O.

**Hydraulic Jacks**

Dudgeon, Richard, 24 Columbia St., N. Y.

Pender, A. L. Son, Wilmington, Del.

Watson-Stillman Co., 204 E. 43d St., N. Y.

**Hydraulic Machinery**

Watson-Stillman Co., 204 E. 43d St., N. Y.

**Hydraulic Presses**

Condit, J. B. & J. M., 25th St. and 11th Ave., N. Y.

**Hydraulic Tools**

Watson-Stillman Co., 204 E. 43d St., N. Y.

Wood, R. D. & Co., Phila., Pa.

**Ice Cream Freezers**

North Bros. Mfg. Co., Philadelphia, Pa.

White Mountain Freezer Co., Nashua, N. H.

**Ice Making Machinery**

York Mfg. Co., York, Pa.

**Ice Picks**

Erie Specialty Co., Erie, Pa.

**Ice Shredders**

Enterprise Mfg. Co., Philadelphia, Pa.

Erie Specialty Co., Erie, Pa.

**Ice Tools**

Gerlach, Peter & Co., Cleveland, O.



American Tool Wks. Co., Cincinnati, O.  
 Baird, U. Machinery Co., Pittsburgh, Pa.  
 Barnes, W. E. & John Co., Rockford, Ill.  
 Benson Mch. Tool Co., Springfield, Mass.  
 Becker-Brinard Milling Mach. Co., Hyde Park, Mass.  
 Bliss E. W. Co., Brooklyn, N. Y.  
 Bowler, Geo. H., Cleveland, O.  
 Briggs, Marvin, 12 Broadway, N. Y.  
 Brova & Sharpe Mfg. Co., Providence, R. I.  
 Bullard Mch. Tool Co., Bridgeport, Ct.  
 Carlin Machinery & Supply Co., Allegheny, Pa.  
 Carlin's Sons Thos., Allegheny, Pa.  
 Cincinnati Milling Mach. Co., Cin. O.  
 Cincinnati Planer Co., Cincinnati, O.  
 Cornell, J. R. & Co., 26th St. and 11th Ave., New York City.  
 Davis, W. P. Machine Co., Rochester, N. Y.  
 Dawson, A. L. & Co., Chicago, Ill.  
 Dawson & Goodwin, Chicago, Ill.  
 Detrick & Harvey Mch. Co., Baltimore, Md.  
 Diamond Drill & Mch. Co., Birdsboro, Pa.  
 Down, J. B. & Co., Chicago, Ill.  
 Draper Mach. Tool Co., Worcester, Mass.  
 Du Bois Iron Works, Du Bois, Pa.  
 Farrel Fdry & Mch. Co., Ansonia, Conn.  
 Ferracuta Machine Co., Bridgeport, N. J.  
 Fish, H. C. Machine Works, Worcester, Mass.  
 Garvin Machine Co., Spring and Varick Sts., N. Y.  
 General Supply Co., 40 John St., N. Y.  
 Geometric Drill Co., Westville, Conn.  
 Gray, Robt. J., 52-54 E. 182d St., N. Y.  
 Hannan & Finton, Springfield, Mass.  
 Harris Mach. Co., Minneapolis, Minn.  
 Hendery Machine Co., Torrington, Conn.  
 Hill, Henry F., Boston, Mass.  
 Hill, Clarke & Co., Boston, Mass.  
 Illinois Maintenance Co., Chicago, Ill.  
 Johnson, Israel H., Jr., & Co., Phila.  
 Johnson, Wm. C. & Sons Mch. Co., St. Louis, Mo.  
 Kaiser, A. V. & Co., Phila., Pa.  
 Lodge & Shipley Mch. Tool Co., Cin., O.  
 Lund, S. T., Boston, Mass.  
 McCabe, J. J., 14 Day Street, N. Y.  
 McDowell & Co., Pittsburgh, Pa.  
 McDowell & Stocker, Co., Chicago.  
 Machinists' Supply Co., Rochester, N. Y.  
 Manning, Maxwell & Moore, 85-89 Liberty St., N. Y.  
 Manville, E. J. Mach. Co., Waterbury, Ct.  
 Marshall & Huchart Mchry. Co., Chicago, Ill.  
 Mossberg, Frank Co., Attleboro, Mass.  
 National Machinery Co., Tiffin, Ohio.  
 New Doty Mfg. Co., Janesville, Wis.  
 New Haven Mfg. Co., New Haven, Conn.  
 New York Machinery Depot, 178 Broadway, New York.  
 Niles Tool Works Co., 138 Liberty St., N. Y.  
 Nilson, A. H. Mch. Co., Bridgeport, Ct.  
 Paradox Machinery Co., Chicago, Ill.  
 Pennsylvania Machine Co., Phila., Pa.  
 Phila. Machine Tool Co., Phila., Pa.  
 Pittsburgh Mfg. Co., Pittsburgh, Pa.  
 Pond Machine Tool Co., Plainfield, N. J.  
 Poole, Robt. & Son Co., Baltimore, Md.  
 Potter & Johnston Co., Pawtucket, R. I.  
 Poulter & Co., Phila., Pa.  
 Pratt & Whitney Co., Hartford, Conn.  
 Prentice Bros., Worcester, Mass.  
 Prentiss Tool & Supply Co., 115 Liberty St., N. Y.  
 Rainier & Williams, Chicago, Ill.  
 Reade, Wm. A. & Co., Cleveland, O.  
 Seymour's Sons L. F., Philadelphia, Pa.  
 Seymour Tool Co., Hartford, Conn.  
 Standard Machinery & Equipment Co., Cleveland, O.  
 Thomas & Lowe Machinery Co., Providence, R. I.  
 Toomey, Frank, Philadelphia, Pa.  
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.  
 Wedderill, Robert & Co., Chester, Pa.  
 Windsor Machine Co., Windsor, Vt.  
 Wisconsin Machinery Co., Milwaukee, Wis.  
 Wormer, C. C. Mch. Co., Detroit, Mich.  
 York, S. M. Co., Cleveland, O.

**Machinery—Wood Working**  
 Deance Machine Wks., Deance, O.  
 Fay, J. A. & Egan Co., Cincinnati, O.

**Machinery Springs**  
 Scott, Chas. Spring Co., Phila., Pa.

**Machinery Builders**  
 Chapman, J. B. & Co., Springfield, Mass.  
 U. S. Projectile Co., Brooklyn, N. Y.

**Machine Screws—See Screws, Machine**

**Machine Screw Work**  
 Spencer Automatic Mch. Screw Co., Hartford, Conn.

**Machine Tools—See Machinery**

**Machine Work**  
 Nuttall, R. D. & Co., Pittsburgh, Pa.

**Machine Wrenches**  
 Billings & Spencer Co., Hartford, Conn.

**Machinists' Scales**  
 Starrett, L. S. Co., Athol, Mass.

**Machinists' Tools and Supplies**  
 Billings & Spencer Co., Hartford, Conn.  
 General Supply Co., 40 John St., N. Y.  
 Keystone Mfg. Co., Buffalo, N. Y.  
 King, J. M. & Co., Waterford, N. Y.

**Magnetic Separators**  
 (res. on, Geo. V. Co., Phila., Pa.)

**Manganese Bronze**  
 Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

**Manufacturing Properties**  
 Hillman, J. H. & Co., Pittsburgh, Pa.

**Manufacturing Sites**  
 Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.  
 Louisville & Nashville R. R., Louisville, Ky.  
 Southern Railway Co., Washington, D. C.

**Measuring Machines**  
 Rogers, Jno. M. Bos., Gauge & Drill Wks., Gloucester City, N. J.

**Meat Choppers**  
 Brown, J. H., 160 Duane St., N. Y.  
 Enterprise Mfg. Co. of Pa., Phila., Pa.  
 Pack, Stow & Wilcox Co., 27 Murray St., New York.  
 Streeter, N. R. & Co., Rochester, N. Y.  
 Woodruff, O. D., Pottstown, Pa.

**Metal Breakers**  
 American Metal Co., 52 Broadway, N. Y.

**Metals**  
 Hendricks Bros., 49 Cliff St., N. Y.  
 Hoffeller, Theo. & Co., Buffalo, N. Y.  
 Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.  
 Rutter, A. T., 256 Broadway, N. Y.  
 United Metals Selling Co., 11 Broadway, N. Y.

**Metal Polish**  
 Hoffman, Geo. W., Indianapolis, Ind.

**Metal Spinning**  
 Goodwin & Kints Co., Winsted, Conn.

**Metal Wheels**  
 Electric Wheel Co., Quincy, Ill.

**Milling Machines**  
 Adams (O.), Dubuque, Iowa.  
 Becker-Brinard Milling Machine Co., Hyde Park, Mass.  
 Brown & Sharpe Mfg. Co., Providence, R. I.  
 Carter & Hake's Mach. Co., Winsted, Ct.  
 Cincinnati Milling Mach. Co., Cin. O.  
 Fox Machine Co., Grand Rapids, Mich.  
 Garvin Machine Co., Spring and Varick Sts., N. Y.  
 Niles Tool Works Co., 138-138 Liberty St., N. Y.  
 Shuster, F. B. Co., New Haven, Conn.  
 Thurston Mfg. Co., Providence, R. I.

**Mining Kelves**  
 Bishop, Geo. H. & Co., Cincinnati, O.  
 Palmer Hdw. Mfg. Co., Troy, N. Y.

**Mining Machinery**  
 Allis, E. P. Co., Milwaukee, Wis.  
 Rand Drill Co., 128 Broadway, N. Y.

**Mining Screens**  
 Harrington & King Perforating Co., Chicago, Ill.  
 Howard & Morse, 45 Fulton St., N. Y.  
 Michigan Wire Cloth Co., Detroit, Mich.

**Miter Boxes**  
 Thomson Bros. & Co., Lowell, Mass.

**Molding Machines**  
 Adams (O.), Dubuque, Iowa.  
 Maywood Fdry. & Mch. Co., Chicago.

**Motor Fans**  
 Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

**Motors, Air**  
 Stow Flexible Shaft Co., Phila., Pa.

**Motors, Electric**  
 Eddy Electric Mfg. Co., Windsor, Conn.  
 General Electric Co., Schenectady, N. Y.  
 Sturtevant, B. F. Co., Boston, Mass.  
 Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.

**Nail Clippers**  
 Cook, H. C. Co., Ansonia, Conn.

**Nail Machinery**  
 Pittsburgh Mfg. Co., Pittsburgh, Pa.

**Nail Pullers**  
 Hagen & Reid, Troy, N. Y.  
 Scranton & Co., The, New Haven, Conn.  
 Smith & Hemenway Co., 236 Broadway, N. Y.  
 Snow, L. T., New Haven, Conn.

**Name Plates, Machinery**  
 Murdock Parlor Grate Co., Boston, Mass.

**Natural Gas Pumps**  
 Norwalk Iron Wks. Co., So. Norwalk, Ct.

**Nickel Platers' Supplies**  
 Eddy Electric Mfg. Co., Windsor, Conn.

**Nickeloid**  
 American Nickeloid Co., Peru, Ill.

**Norway Shapes**  
 Rowland, William & Harvey, Frankford, Philadelphia.

**Nuts—See Bolts**

**Nuts, Self-Locking**  
 National Elastic Nut Co., Milwaukee, Wis.

**Nut Machines**  
 Dunham Nut Co., Unionville, Conn.

**Oil Burners**  
 Burns Hydro-Carbon Burner Co., Fort Plain, N. Y.

**Oil Burning Appliances**  
 Rockwell Engineering Co., 36 Cortlandt St., N. Y.

**Oil Extractor**  
 Reed & Curtis Mch. Screw Co., Worcester, Mass.

**Oil Heaters—See Oil Stoves**

**Oil Stones**  
 Pike Mfg. Co., Pike Station, N. H.

**Oil Stoves—(See Stoves Oil, Vapor and Gasoline)**

**Oilers**  
 Bay State Stamping Co., Worcester, Mass.

**Ores**  
 Gem Mfg. Co., Pittsburgh, Pa.  
 Hammer & Co., Bradford, Conn.  
 Stoutenburg Mfg. Co., Kethsburg, Ill.  
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

**Oilless Bearings**  
 North American Metalline Co., Long Island City, N. Y.

**Ore Breakers**  
 Aultman Co., Canton, O.  
 Cresson, Geo. V. Co., Phila., Pa.

**Ores**  
 Blair, Reed F. Co., Pittsburgh, Pa.  
 Samuel, Frank, Philadelphia, Pa.  
 Wister, Francis, Philadelphia, Pa.

**Ovens, Portable**  
 Blodgett, G. S. Co., Burlington, Vt.

**Ox Shoes**  
 Scranton Forging Co., Scranton, Pa.  
 Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

**Packing**  
 Boston Belting Co., Boston, Mass.  
 Morrison, Robert, St. Louis, Mo.  
 Peerless Rubber Mfg. Co., 16 Warren Street, N. Y.

**Packing, Iron**  
 Smooth On Mfg. Co., Jersey City, N. J.

**Padlocks**  
 Graham, John H. & Co., 113 Chambers Street, New York.

**Paints**  
 Dixon, Jos. Crucible Co., Jersey City.

**Pants Stretcher**  
 Covert Mfg. Co., West Troy, N. Y.

**Patent Solicitors**  
 Goepel & Raegenar, 290 Broadway, N. Y.  
 Howson & Howson, Philadelphia and Washington.  
 Stocking, E. B., Washington, D. C.

**Patterns**  
 Balkwill Pattern Wks., Cleveland, O.  
 Norwalk Pattern & Mfg. Co., So. Norwalk, Conn.

**Pattern Letters**  
 Rutter, A. G., 103 Beekman St., N. Y.  
 St. Louis Electrottype Foundry, St. Louis

**Perforated Metal**  
 Clinton Wire Cloth Co., Clinton, Mass.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

**Phosphor Bronze**  
 Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.  
 Phosphor Bronze Smelting Co., Limited, Philadelphia.

**Phosphor Tin**  
 Crescent Phosphorized Metal Co., Philadelphia, Pa.  
 Halk & Naumann, 518 Pearl St., N. Y.  
 Syracuse Smelting Wks., Syracuse, N. Y.

**Picture Wire**  
 Ossawa Mills Co., Norwich, Conn.

**Pig Casting Machines**  
 Heyl & Patterson, Pittsburgh, Pa.

**Pig Iron**  
 Alabama Consolidated Coal & Iron Co., Birmingham, Ala.  
 Baird, C. R. & Co., Phila., Pa.  
 Cherry Valley Iron Co., Pittsburgh, Pa.  
 Dimmick, J. K. & Co., Phila., Pa.  
 Hickman, Williams & Co., Chicago, Ill.  
 Houston, C. B. & Co., Philadelphia, Pa.  
 Nicoll, B. & Co., 39-61 Wall St., N. Y.  
 Republic Iron & Steel Co., Chicago.  
 Samuel, Frank, Philadelphia, Pa.  
 Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.  
 Soder, W. P. & Co., Pittsburgh, Pa.  
 Superior Charcoal Iron Co., Grand Rapids, Mich.  
 Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
 Virginia Iron, Coal and Coke Co., Bristol, Va.—Tenn.

**Pig Iron Analysis**  
 Church, S. R., San Francisco, Cal.

**Pig Iron Storage**  
 Am. Pig Iron Storage Warehouse Co., 4 Wall St., N. Y.

**Pile Drivers**  
 Vulcan Iron Works, Chicago, Ill.

**Pincers**  
 Washington Tool Co., Owatonna, Wis.

**Pipe, Bent**  
 Harrisburg Pipe Bending Co., Harrisburg, Pa.  
 National Pipe Bending Co., New Haven, Conn.

**Pipes, Fittings, &c.**  
 Jarecki Mfg. Co., Erie, Pa.  
 McNab & Harlin Mfg. Co., N. Y.

**Pipe, Riveted Steel**  
 Pollock, W. B. Co., Youngstown, O.  
 Scaife, Wm. R. & Sons, Pittsburgh.  
 Warren City Boiler Works, Warren, O.

**Pipe, Water and Gas**  
 Millar, C. & Son Co., Utica, N. Y.  
 National Tube Co., Pittsburgh, Pa.  
 Red Jacket Mfg. Co., Dayton, Iowa.  
 U. S. Cast Iron Pipe & Foundry Co., Phila., Pa.  
 Wood, R. D. & Co., Philadelphia, Pa.

**Piston Rods, Tobin Bronze**  
 Ansonia Brass & Copper Co., 99 John St., N. Y.

**Planes**  
 Stanley Rule & Level Co., N. Y.

**Planers**  
 Amer. Tool Works Co., Cincinnati, O.  
 Baird, U. Machinery Co., Pittsburgh, Pa.  
 Cincinnati Planer Co., Cincinnati, Ohio.  
 Detrick & Harvey Mch. Co., Baltimore.  
 Draper Mch. Tool Co., Worcester, Mass.  
 Pond Machine Tool Co., Plainfield, N. J.  
 Whitcomb Mfg. Co., Worcester, Mass.  
 Wilson, W. A., Rochester, N. Y.

**Plated Ware**  
 International Silver Co., Meriden, Ct.

**Plates, Iron and Steel**  
 Jones & Laughlins, Ltd., Pittsburgh, Pa.  
 Lukens Iron & Steel Co., Coatesville, Pa.  
 Singer, Nimick & Co., Inc., Pittsburgh.  
 Wood, Alan Co., Philadelphia.

**Plate Iron Work**  
 Scaife, Wm. B. & Sons, Pittsburgh.

**Pliers**  
 Bridgeport Mfg. Co., Bridgeport, Conn.  
 Cronk Hanger Co., Elmira, N. Y.  
 Utica Drop Forge & Tool Co., Utica, N. Y.

**Pneumatic Tools**  
 Phila. Pneumatic Tool Co., Phila., Pa.

**Pocket Knives**  
 Cattaraugus Cutlery Co., Little Valley, N. Y.

**Polishing Wheels**  
 Divine Bros. Co., Utica, N. Y.

**Portable Track**  
 Atlas Bolt & Screw Co., Cleveland, O.

**Poultry Fencing**  
 DeKalb Fence Co., DeKalb, Ill.

**Poultry Nettings**  
 Gilbert & Bennett Mfg. Co., 44 Cliff St., N. Y.  
 N. J. Wire Cloth Co., Trenton, N. J.  
 Tyler, W. S. Co., Cleveland, O.  
 Wright & Colton Wire Cloth Co., Worcester, Mass.

**Power Hack Saws**  
 Hofer Mfg. Co., Freeport, Ill.

**Power Hammers**  
 Baendry & Co., Boston, Mass.  
 Bradley Co., Syracuse, N. Y.  
 Dieneit & Eisenhardt, Philadelphia.  
 Dupont Mfg. Co., St. Johnsbury, Vt.  
 Kidder, R. E., Worcester, Mass.  
 Long & Allstatter Co., Hamilton, Ohio.  
 Miner & Peck Mfg. Co., New Haven, Ct.  
 Scranton & Co., The, New Haven, Conn.

**Power Transmuting Mach'y**  
 Cresson, Geo. V. Co., Phila., Pa.  
 Dodge Mfg. Co., Mishawaka, Ind.  
 Norwalk Iron Wks. Co., So. Norwalk, Ct.

**Pressed Metal Work**  
 Avery Stamping Co., Cleveland, Ohio.

**Presses, Power**  
 Adriance Mach. Works, Brooklyn, N. Y.  
 Bliss, E. W. Co., Brooklyn, N. Y.  
 Cross & Speirs Mch. Co., Waterbury, Ct.  
 Ferracuta Mach. Co., Bridgeport, N. J.  
 Hibbard, W. H., Brooklyn, N. Y.  
 Hillies & Jones Co., Wilmington, Del.  
 Leffer, Chas. & Co., Brooklyn, N. Y.  
 Manville, E. J. Mch. Co., Waterbury, Ct.  
 Merriman, A. H., Meriden, Conn.  
 Mossberg & Granville Mfg. Co., Providence, R. I.  
 Niagara Machine & Tool Wks., Buffalo.  
 Perkins Machine Co., Boston, Mass.  
 Phila. Machine Tool Co., Phila., Pa.  
 Rudolph & Krummel, Chicago, Ill.  
 Shuster, F. B. Co., New Haven, Conn.

**Projectiles**  
 National Tube Co., Pittsburgh, Pa.

**Pulleys**  
 Amer. Pulley Co., Phila., Pa.  
 Dodge Mfg. Co., Mishawaka, Ind.  
 Eastern Machinery Co., New Haven, Ct.  
 Evans, G. F., Boston, Mass.  
 Hess, Snyder & Co., Massillon, O.  
 Jones & Laughlins Ltd., Pittsburgh, Pa.  
 Saginaw Mfg. Co., Saginaw, Mich.  
 Woods, T. B. Sons, Chambersburg, Pa.

**Pump Chains**  
 Garland Chain Co., Rankin Station, Pa.

**Pumping Machinery**  
 Cook, A. D., Lawrenceburg, Ind.  
 Filer & Stowell Co., Milwaukee, Wis.  
 Ingersoll-Sergeant Drill Co., 28 Cortlandt St., N. Y.  
 Lake City Engineering Co., Erie, Pa.  
 McDowen, J. H. & Co., Cincinnati, O.  
 Southwick Fdry. & Mch. Co., Philadelphia, Pa.

**Pumps**  
 Athol Pump Co., Athol, Mass.  
 Barnes Mfg. Co., Mansfield, O.  
 Deming Co., Salem, O.  
 Edison Mfg. Co., Boston, Mass.  
 Flint & Walling Co., Kendallville, Ind.  
 H. B. Snyder & Co., Massillon, O.  
 Humphreys Mfg. Co., Mansfield, O.  
 Myers, F. E. & Bro., Ashland, Ohio.  
 Red Jacket Mfg. Co., Davenport, Ia.  
 St. Joseph Pump & Mfg. Co., St. Joseph, Mo.  
 Wilder, S. & Co., Holliston, Mass.

**Punches, Conductors'**  
 Woodman, R. Mfg. & Supply Co., Boston, Mass.

**Punches and Shears, Hand and Power**  
 Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.  
 Bicknell Hdw. Co., Janesville, Wis.  
 Bliss, E. W. Co., Brooklyn, N. Y.  
 Hillies & Jones Co., Wilmington, Del.  
 Long & Allstatter Co., Hamilton, Ohio.  
 Mersick, C. S. & Co., New Haven, Conn.  
 New Doty Mfg. Co., Janesville, Wis.  
 Williams, White & Co., Moline, Ill.

**Punching and Shearing**  
 Harrington & King Perforating Co., Chicago, Ill.

**Push Carts**  
 Syracuse Chilled Plow Co., Syracuse.

**Pyrometers**  
 Brown, Edward, Phila., Pa.  
 Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

**Railways, Industrial**  
 Hunt, C. W. Co., West New Brighton, N. Y.

**Rat and Mouse Traps**  
 Burditt & Williams, Boston, Mass.

**Ratchet Drills**  
 Keystone Mfg. Co., Buffalo, N. Y.

**Razors**  
 Buck Bros., Millbury, Mass.

**Razor Hones**  
 Pike Mfg. Co., Pike Station, N. H.

**Reamers**  
 Morse Twist Drill & Mch. Co., New Bedford, Mass.

**Recording Gauges**  
 Bristol Co., Waterbury, Conn.  
 Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

**Reels**  
Hendryk, A. B. Co., New Haven, Conn.

**Refrigerating Machinery**  
York Mfg. Co., York, Pa.

**Refrigerators**  
Maine Mfg. Co., Nashua, N. H.

**Registers**  
Convey Mfg. Co., Boston, Mass.

**Revolving Mills**  
Sowell Mfg. & Foundry Co., So. Milwaukee, Wis.

**Relaying Rails**  
Block & Oak Iron Co., Chicago, Ill.

**Relaying Rails**  
Donaldson & Newton, Phila., Pa.

**Relaying Rails**  
Isaac Lowph Iron Co., Cincinnati, O.

**Relaying Rails**  
May & Spalding, 32 Broadway, N. Y.

**Relaying Rails**  
Steel & Nail Supply Co., 100 B'way, N. Y.

**Relaying Tools**  
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

**Relaying Tools**  
Hungerford, U. T., Brass & Copper Co., 121 North St., N. Y.

**Relaying Tools**  
Ideal Mfg. Co., New Haven, Conn.

**Repairing Sets, Family**  
Mitchell, W. B. Chicago, Ill.

**Repairing Sets, Family**  
Star Steel Plate Co., Newark, N. J.

**Repairing Sets, Family**  
Imperial Bit & Snap Co., Racine, Wis.

**Revolutions Counters**  
Pitkin, A. B. Machinery Co., Providence, R. I.

**Revolutions Counters**  
Tabor Mfg. Co., Elizabeth, N. J.

**Revolvers**  
Harrington & Richardson Arms Co., Worcester, Mass.

**Revolvers**  
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

**Rides**  
Marlin Fire Arms Co., New Haven, Ct.

**Rides**  
Remington Arms Co., 315 B'way, N. Y.

**Rides**  
Stevens Arms & Tool Co., Chicopee Falls, Mass.

**Ring Rollers**  
Shuster, F. B. Co., New Haven, Conn.

**Riveters**  
Phila. Pneumatic Tool Co., Phila., Pa.

**Rivets**  
American Iron & Steel Mfg. Co., Lebanon, Pa.

**Rivets**  
American Screw Co., Providence, R. I.

**Rivets**  
Blake & Johnson, Waterbury, Conn.

**Rivets**  
Burden Iron Co., Troy, N. Y.

**Rivets**  
Clark & Cowles, Plainville, Conn.

**Rivets**  
Cobb & Drew, Plymouth, Mass.

**Rivets**  
Garland Chain Co., Rankin station, Pa.

**Rivets**  
Hungerford, U. T., Brass & Copper Co., 121 North St., N. Y.

**Rivets**  
Lans, M. & Son, Pittsburgh, Pa.

**Rivets**  
Melness, C. E. & Co., Phila., Pa.

**Rivets**  
Plymouth Mills, Plymouth, Mass.

**Rivets**  
Rockford Bolt Works, Rockford, Ill.

**Rivets**  
Townsend C. C. & E. P., New Brighton, Pa.

**Riveting Machines**  
Bethlehem Foundry & Mch. Co., So. Bethlehem, Pa.

**Riveting Machines**  
Shuster, F. B. Co., New Haven, Conn.

**Roll Mill Machinery**  
Bradcock Machine & Mfg. Co., Brad-dock, Pa.

**Roll Mill Machinery**  
Morgan Construction Co., Worcester, Mass.

**Roll Turning Tools**  
Trethewey, Sam'l & Co., Ltd., Pittsburgh

**Roller Bearings**  
Ball Bearing Co., Boston, Mass.

**Roller Bearings**  
Mosesberg & Granville Mfg. Co., Providence, R. I.

**Rolling Mill Machinery**  
Booth, The Lloyd Co., Youngstown, O.

**Rolling Mill Machinery**  
Everson, B. M., Pittsburgh, Pa.

**Rolling Mill Machinery**  
Farrell Fdry & Mch. Co., Ansonia, Ct.

**Rolling Mill Machinery**  
Frank-Kneeland Mach. Co., Pittsburgh

**Rolling Mill Machinery**  
Garrison, A. Foundry Co., Pittsburgh

**Rolling Mill Machinery**  
Mesta Machine Co., Pittsburgh, Pa.

**Rolling Mill Machinery**  
Morgan Construction Co., Worcester, Mass.

**Rolling Mill Machinery**  
Mosesberg & Granville Mfg. Co., Providence, R. I.

**Rolling Mill Machinery**  
Penna. Engineering Wks., New Castle, Penna.

**Rolling Mill Machinery**  
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

**Rolls, Chilled, Sand and Steel**  
Birmingham Iron Fdry., Derby, C. an

**Rolls, Chilled, Sand and Steel**  
Booth, The Lloyd Co., Youngstown, O.

**Rolls, Chilled, Sand and Steel**  
Farrell Fdry & Mch. Co., Ansonia, Ct.

**Rolls, Chilled, Sand and Steel**  
Frank-Kneeland Mach. Co., Pittsburgh

**Rolls, Chilled, Sand and Steel**  
Garrison, A. Foundry Co., Pittsburgh

**Rolls, Chilled, Sand and Steel**  
Mesta Machine Co., Pittsburgh, Pa.

**Rolls, Chilled, Sand and Steel**  
Morgan Construction Co., Worcester, Mass.

**Rolls, Chilled, Sand and Steel**  
Mosesberg & Granville Mfg. Co., Providence, R. I.

**Rolls, Chilled, Sand and Steel**  
Penna. Engineering Wks., New Castle, Penna.

**Rolls, Chilled, Sand and Steel**  
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

**Rolls, Chilled, Sand and Steel**  
Youngstown Foundry & Machine Co., Youngstown, O.

**Roofing and Siding**  
As. Bait Ready Roofing Co., 130 Water St., N. Y.

**Roofing and Siding**  
Garry Iron & Steel Roofing Co., Cleveland, O.

**Roofing and Siding**  
Kanneberg Roofing Co., Canton, O.

**Roofing and Siding**  
Scaife, Wm. B. & Sons, Pittsburgh

**Roofing and Siding**  
Youngstown Iron & Steel Roofing Co., Youngstown, O.

**Rope and Cordage**  
American Mfg. Co., 66 Wall St., N. Y.

**Rope and Cordage**  
Waterbury Rope Co., 69 South St., N. Y.

**Rope and Cordage**  
Covert Mfg. Co., West Troy, N. Y.

**Rope and Cordage**  
Rope Shield

**Rope and Cordage**  
Ironides Co., Columbus, Ohio

**Rope and Cordage**  
Rope Transmission and Hoisting

**Rope and Cordage**  
American Mfg. Co., 66 Wall St., N. Y.

**Rope and Cordage**  
California Wire Works, San Francisco

**Rope and Cordage**  
Hunt, G. W. Co., West New Brighton, N. Y.

**Rope and Cordage**  
Leschen, A. & Sons, Rope Co., St. Louis

**Rope and Cordage**  
Woolf, T. B. Sons, Chambersburg, Pa.

**Rubber Goods**  
Boston Belting Co., Boston, Mass.

**Rubber Goods**  
Canfield, H. O., Bridgeport, Conn.

**Rubber Goods**  
Peerless Rubber Mfg. Co., 16 Warren Street, N. Y.

**Rubber Scrap**  
Hofeller, Theo. & Co., Buffalo, N. Y.

**Rules**  
Lufkin Rule Co., Saginaw, Mich.

**Rules**  
Stanley Rule & Level Co., 29 Chambers St., N. Y.

**Sand Irons**  
Enterprise Mfg. Co., Phila., Pa.

**Sand Irons**  
Williams, A. C., Ravenna, O.

**Sand Blast Apparatus**  
Ward, Edgar T. & Sons, Boston, Mass.

**Sand Paper**  
Baeder, Adamson & Co., Phila., Pa.

## Sash Balances

Caldwell Mfg. Co., Rochester, N. Y.

Putnam Sash Balance Co., Rochester, N. Y.

Streeter, N. R. & Co., Rochester, N. Y.

**Sash Cords and Chains**  
Bridgeport Chain Co., Bridgeport, Conn.

Morton, Thos., 63 Elizabeth, N. Y.

Samson Cordage Works, Boston, Mass.

Silver Lake Co., Boston, Mass.

Smith & Egge Mfg. Co., Bridgeport

**Sash Locks**  
Fitch, W. & E. T. Co., The, New Haven, Conn.

**Sash Pullers**  
Fox Machine Co., Grand Rapids, Mich.

Grand Rapids Hardware Co., Grand Rapids, Mich.

Palmer Hardware Mfg. Co., Troy, N. Y.

**Sash Weights**  
Barney & Reed Mfg. Co., Boston, Mass.

Brown, E. & Co., Philadelphia, Pa.

**Sausage Stuffers**  
National Specialty Mfg. Co., Phila., Pa.

**Saws**  
Atkins, E. C. & Co., Indianapolis, Ind.

Bishop, Geo. H. & Co., Cincinnati, Ohio

Diston, Henry & Sons, Inc., Phila., Pa.

National Saw Co., Newark, N. J.

Simonds Mfg. Co., Fitchburg, Mass.

**Saw Clamps**  
Diston, Henry & Sons, Inc., Phila., Pa.

Taintor Mfg. Co., 9 to 15 Murray, N. Y.

**Saw Guides**  
Thomson Bros. & Co., Lowell, Mass.

**Saw Handles**  
Ladd, W. C., Bristol, Conn.

**Saw Sets**  
Diston, Henry & Sons, Inc., Phila., Pa.

Taintor Mfg. Co., 9 to 15 Murray, N. Y.

**Saw Tools**  
Atkins, E. C. & Co., Indianapolis, Ind.

**Scales**  
American Cutlery Co., Chicago, Ill.

Chatillon, John & Sons, 35-39 Cliff, N. Y.

Chicago Seal Co., Chicago, Ill.

Felouse Scale & Mfg. Co., Chicago, Ill.

Standard Scale & Supply Co., Pittsburgh

**Scrap Metals**  
Armstrong, R. S. & Bro., Atlanta, Ga.

Blake, M. J. & M., 11th Ave. and 15th St., N. Y.

Botcher, C. Hoboken, N. J.

Greiner, E., Philadelphia, Pa.

Hitner, H. A. & Sons, Phila., Pa.

Hofeller, Theo. & Co., Buffalo, N. Y.

Kennedy, L. E. & Co., 93 Liberty St., N. Y.

Leaf, E. B. & Co., Philadelphia, Pa.

Leonard, John & Co., 22 Broadway, N. Y.

Miles, E. O. & Co., Atlana, Ga.

N. J. Iron & Metal Co., Paterson, N. J.

Phillips, F. R. & Sons Co., Phila., Pa.

Rogers, W. H., Bridgeport, Conn.

Samuels, M. Sons, Brooklyn, N. Y.

Smith, Morton B. Co., New York

**Scrapers, Road**  
American Steel Scraper Co., Sidney, O.

Aultman Co., Canton, Ohio

Kilbourne & Jacobs Mfg. Co., Columbus, Ohio

Sidney Steel Scraper Co., Sidney, O.

Syracuse Chilled Plow Co., Syracuse

**Screens, Perforated Metal**  
Harrington & King Perforating Co., Chicago, Ill.

**Screens, Window and Door**  
Daro, Edw. & Sons, Philadelphia, Pa.

**Screw Cutting Dies**  
Card, S. W. Mfg. Co., Mansfield, Mass.

Geometric Drill Co., Westville, Conn.

Rogers, Jno. M. Boat Gauge & Drill Wks., Gloucester City, N. J.

Wells Bros. & Co., Greenfield, Mass.

Wiley & Russell Mfg. Co., Greenfield, Mass.

Winter Bros., Wrentham, Mass.

**Screw Drivers**  
Baunsdorf-Mueller Co., Elizabeth, N. J.

Brown, R. H. & Co., New Haven, Conn.

Goodell-Pratt Co., Greenfield, Mass.

Mayhew, H. H. Co., Shelburne Falls, Mass.

North Bros. Mfg. Co., Philadelphia, Pa.

Sawyer Tool Co., Fitchburg, Mass.

Union Mfg. Co., Buffalo, N. Y.

**Screw Machine Products**  
Dodge Machine Screw Co., Boston, Mass.

**Screw Machinery**  
American Tool Wks. Co., Cincinnati, O.

Brown & Sharpe Mfg. Co., Providence

Costello, J. E. Mch. Wks., Brooklyn, N. Y.

Draper Mach. Tool Co., Worcester, Mass.

Garvin Machine Co., Spring and Varick Sts., N. Y.

Jones & Lamson Mch. Co., Springfield, Vt.

Windsor Mch. Co., Windsor, Vt.

**Screws**  
Coach

Hall's Sam'l Sons, 229 West 10th St., N. Y.

Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.

**Machine**  
American Screw Co., Providence, R. I.

Blake & Johnson, Waterbury, Conn.

Chicago Screw Co., Chicago, Ill.

Haskell, Wm. H. Mfg. Co., Pawtucket

Hubbell, Harvey, Bridgeport, Conn.

Illinois Screw Co., Chicago, Ill.

Miles, F. S., 335 Quarry, Philadelphia

New Britain Hdw. Mfg. Co., New Britain, Conn.

Niagara Screw Co., Buffalo, N. Y.

Phila. Mach. Screw Works, Phila., Pa.

Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.

Reed & Curtis Mch. Screw Co., Worcester, Mass.

Rhode Island Tool Co., Providence, R. I.

Worcester Mch. Screw Co., Worcester

**Wood**  
American Screw Co., Providence, R. I.

Franklin Moore Co., Winsted, Conn.

Reading Hardware Co., Reading, Pa.

Reading Screw Co., Norristown, Pa.

**Screw Saws**  
Barnes, W. F. & John Co., Rockford, Ill.

Millers Falls Co., 28 Warren St., N. Y.

Seneca Falls Mfg. Co., Seneca Falls, N. Y.

## Seythe Stones and Whetstones

Cleveland Stone Co., Cleveland, O.

Pike Mfg. Co., Pike Station, N. H.

**Seamless Steel Tubes**  
Ivins Ellwood, 487 Broadway, N. Y.

Janney, Steelmets & Co., Phila., Pa.

National Tube Co., Pittsburgh, Pa.

**Security Snaps**  
Sundries Mfg. Co., South Bend, Ind.

**Set Screw Protectors**  
Canfield, H. O., Bridgeport, Conn.

**Sewing Machines**  
Demorest Mfg. Co., Williamsport, Pa.

National Sewing Machine Co., Belvidere, Ill.

**Shafting**  
Crescent, Geo. V. Co., Philadelphia, Pa.

Dodge Mfg. Co., Mishawaka, Ind.

Fairmount Mch. Co., Philadelphia, Pa.

Finished Steel Co., Youngstown, O.

Jones & Laughlins Co., Pittsburgh, Pa.

Pardee & Sons, Perth Amboy, N. J.

Pittsburgh Steel Shafting Co., Rankin, Pa.

**Stow Mfg. Co., Binghamton, N. Y.**

Woods, T. B. Sons, Chambersburg, Pa.

**Shaped Iron and Steel**  
Allentown Rolling Mill, Allentown, Pa.

American Steel Hoop Co., Battery Park Building, N. Y.

American Steel & Wire Co., Chicago, Ill.

Forest City Steel & Iron Co., Cleveland, Ind.

Lindsay, W. W. & Co., Phila., Pa.

Lockhart Iron & Steel Co., Pittsburgh

National Steel Co., Bridgeport, O.

Pascale Rolling Mill Co., Paterson, N. J.

Phoenix Iron Co., Phila., Pa.

Pittsburgh Steel Shafting Co., Rankin, Pa.

Keppable Iron & Steel Co., Chicago, Ill.

**Shapers**  
Barker-Chard Mach. Tool Co., Cincinnati, O.



Lukens Iron & Steel Co., Coatesville, Pa.  
Nash, Geo. & Co., Chicago.  
National Steel Co., Battery Park Building, N. Y.  
Newkirk, J. B. & Co., Philadelphia, Pa.  
Otis Steel Co., Ltd., Cleveland, Ohio.  
Republic Iron & Steel Co., Chicago, Ill.  
Rowland, Wm. & Harvey, Frankford, Philadelphia.  
Singer, Nimick & Co., Inc., Pittsburgh.  
Wardlow, S. & C., Sheffield, England.  
Wilnot & Hobbs Mfg. Co., Bridgeport.  
*Manufacturers' Agents*  
Ogden & Wallace, 577-583 Greenwich St., New York.  
Snyder, W. P. & Co., Pittsburgh, Pa.  
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.  
Virginia Iron, Coal and Coke Co., Bristol, Va.—Tenn.

#### Steel, Self Hardening

Denman & Davis, 85-87 John St., N. Y.

#### Steel Rails

Lorain Steel Co., Lorain, Ohio.

#### Steel Stamps and Stencil Dies

Eucker, L. A. Stamp Wks., Little Ferry, N. J.  
Ness, Geo. M., Jr., 61 Fulton St., N. Y.  
Schwerdtle & Siebert, Bridgeport, Conn.

#### Steel, Tool

Braeburn Steel Co., Braeburn, Pa.  
Canton Steel Co., Canton, Ohio.  
Crecent Steel Co., Pittsburgh, Pa.  
Denman & Davis, 85-87 John St., N. Y.  
Frankford Steel Co., Philadelphia, Pa.  
Jesop, Wm. & Sons, Sheffield, England.  
John St. N. Y.  
Jones, R. M. & Co., Boston, Mass.  
La Belle Steel Co., Pittsburgh, Pa.  
Nash, Geo. & Co., Chicago.  
Singer, Nimick & Co., Pittsburgh, Pa.

#### Steel Ladders, Rolling

Bicycle Step Ladder Co., Chicago, Ill.  
Coburn Trolley Track Mfg. Co., Holyoke, Mass.  
Milbradt, G. A. & Co., St. Louis, Mo.  
Morley Bros., Saginaw, Mich.

#### Stocks and Dies

Card, S. W. Mfg. Co., Mansfield, Mass.  
Curtis & Curtis, Bridgeport, Conn.  
Hollands Mfg. Co., Erie, Pa.  
Jones & Lamson Mfg. Co., Springfield, Vt.  
Jarecki Mfg. Co., Erie, Pa.  
Saunders' Sons, D., Yonkers, N. Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield.  
Winter Bros., Wrentham, Mass.

#### Stone Cutting Machinery

Gilmour, J., Bennett Bldg., N. Y.

#### Stone Working Machinery

Patch, F. R. Mfg. Co., Rutland, Vt.

#### Stop Screws

Head, A. P. & Co., Chicago, Ill.

#### Store Fixtures

Warren, J. M. Mfg. Co., Chicago, Ill.

#### Storm Window Fasteners

Woodruff, W. W. & Sons, Mt. Carmel, Ct.

#### Stone Linings

Ostrander Fire Brick Co., Troy, N. Y.

#### Stove Pipe Thimbles

Cheney, S. & Son, Manlius, N. Y.

#### Stove Tracks

Arcaide Mfg. Co., Freeport, Ill.

#### Stoves, Oil, Vapor and Gasoline

Novelty Mfg. Co., Jackson, Mich.  
Schneider & Trenkamp Co., Cleveland, Ohio.

#### Straightening Machines, Wire and Sheet Metal

Shuster, F. B. Co., New Haven, Conn.

#### Structural Iron and Steel Work

American Bridge Co., East Berlin, Ct.  
Boston Bridge Works, Boston, Mass.  
Du Bois Iron Works, Du Bois, Pa.  
Eastern Bridge & Structural Co., Worcester, Mass.  
Forest City Steel & Iron Co., Cleveland, Ohio.  
Illinois Steel Co., Chicago, Ill.  
Moseley Iron Bridge & Roof Co., 30 Cortlandt St., N. Y.  
New England Structural Co., Boston, Mass.  
Phoenix Iron Co., Philadelphia, Pa.  
Ritter-Conley Mfg. Co., Pittsburgh, Pa.  
Stewart Iron Works, Cincinnati, Ohio.  
West Side Foundry Co., Troy, N. Y.

#### Sulphuric Acid

Mathiessen & Heiler Zinc Co., La Salle, Ill.

#### Swaging Machine

Excelsior Needle Co., Torrington, Ct.

#### Table Ware

International Silver Co., Meriden, Ct.

#### Tacks, Brads, &c.

Diamond Tack & Nail Works, Raynham, Mass.  
Grand Crossing Tack Co., Grand Crossing, Ill.  
Milwaukee Tack Co., Milwaukee, Wis.  
Plymouth Mills, Plymouth, Mass.  
Ripley & Barnett, Plymouth, Mass.  
Shelton Co., Birmingham, Conn.

#### Tack and Nail Machinery

Kimball Bros. & Sprague, Brockton, Mass.  
Sweetzer, W. A., Brockton, Mass.

#### Tanks, Iron and Steel

Clarendon Roller Wks., No. Clarendon, Pa.  
Scaife, Wm. R. & Sons, Pittsburgh.

#### Tapes

Lufkin Rule Co., Saginaw, Mich.

#### Tap Holder

Ideal Machine Works, Hartford, Conn.

#### Tapping Machines

Hutbell, Harvey, Bridgeport, Conn.

#### Taps and Dies

Beasley, C. H. & Co., Chicago, Ill.  
Butterfield & Co., Derby Line, Vt.  
Card, S. W. Mfg. Co., Mansfield, Mass.  
Reece, E. F. Co., Greenfield, Mass.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield.  
Winter Bros., Wrentham, Mass.

#### Telephones

Rawson Electric Co., Elvira, Ohio.

#### Terne Plate

American Tin Plate Co., N. Y.

#### Thimble Skeins

Mitchell, W. B., Chicago, Ill.

#### Time Recorders

Chicago Time Register Co., Chicago, Ill.  
Nantz, C. & Co., 121 Duane St., N. Y.  
Simplex Time Recorder Co., Gardner, Mass.  
Waggoner Watchman Clock Co., Grand Rapids, Mich.

#### Tin Mills

Philadelphia Roll & Mch. Co., Phila., Pa.  
Phillips, F. R. & Sons Co., Phila., Pa.

#### Tinners' Tools and Machines

Niagara Machine & Tool Works, Buffalo.

#### Tin Plate

American Tin Plate Co., N. Y.  
Champion Iron & Steel Co., Muskegon, Mich.

#### Tin Plate Machinery

Lloyd Booth Co., Youngstown, Ohio.

#### Tinware

Keen & Hagerty, Baltimore, Md.  
Seamless Metal Ware Co., 277 Broadway, N. Y.

#### Tinware Machinery

Shuster, F. B. Co., New Haven, Conn.

#### Tobin Bronze

Ansonia Brass & Copper Co., 99 John St., N. Y.

#### Toe Calks

Leonhardt & Co., Berlin, Schöneberg, Germany.

#### Toe Calks, Steel

Burke, P. F., Boston, Mass.

#### Tool Chests

Am. Tool Chest Co., 200 W. Houston St., New York.

#### Tool Grinders

Bliss, R. Mfg. Co., Fawtucket, R. I.

#### Tool Holders

Armstrong Bros. Tool Co., Chicago.

#### Tools

Athol Machine Co., Athol, Mass.  
Brown, R. H. & Co., New Haven, Conn.  
Goodell Pratt Co., Greenfield, Mass.  
Mayhew, H. H. Co., Shelburne Falls, Mass.  
Millers Falls Co., 28 Warren St., N. Y.  
Springfield Machine Screw Co., Springfield, Mass.  
Stanley Rule & Level Co., 29 Chambers St., New York.  
Starrett, L. S. Co., Athol, Mass.  
Stevens, J., Arms & Tool Co., Chicopee.

#### Tools, Blacksmith and Wheelwright

Champion Blower & Forge Co., Lancaster, Pa.  
Wiley & Russell Mfg. Co., Greenfield, Mass.

#### Tools, Steam and Gas Fitters'

Saunders' Sons, D., Yonkers, N. Y.

#### Torches, Oil and Gasoline

Schneider & Trenkamp Co., Cleveland, O.

#### Tote Boxes

Clark, W. J. & Co., Salem, O.

#### Transom Openers

Ormsby, E. A., Melrose, Mass.

#### Tree Guard

Hartman Mfg. Co., 309 Broadway, N. Y.

#### Trolleys

Up-to-date Mfg. Co., Terre Haute, Ind.

#### Trowels

Bishop, Geo. H. & Co., Cincinnati, O.  
National Saw Co., Newark, N. J.

#### Trucks

Boston & Lockport Block Co., Lockport, N. Y.  
Kilbourne & Jacobs Mfg. Co., Columbus, Lansing Wheelbarrow Co., Lansing, Mich.  
Syracuse Chilled Plow Co., Syracuse, N. Y.  
Variety Machine Co., Warsaw, N. Y.

#### Tub Hoops

Outman Bros., Medina, Ohio.

#### Tube Expanders

Renderer, A. L. Sons, Wilmington, Del.

#### Tubes, Seamless Drawn Copper, Brass and Bronze

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
Randolph-Cloves Co., Waterbury, Conn.

#### Tubing, Brass

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.  
Ivins, Ellwood, 437 Broadway, N. Y.  
Phoenix Tube Co., Brooklyn, N. Y.  
Spofford, W. S. & Son, Providence, R. I.

#### Tubing, Iron

Phoenix Tube Co., Brooklyn, N. Y.

#### Tubing, Seamless

Ivins Ellwood, 437 Broadway, N. Y.

#### Tubing, Steel

Best Transmission Co., Danbury, Ct.  
Ivins, Ellwood, 437 Broadway, N. Y.  
Jannet, Steinmetts & Co., Phila., Pa.  
Leng's John S. Son & Co., 4 Fletcher St., Melrose, C. E. & Co., Phila., Pa.  
National Tube Co., Pittsburgh, Pa.  
Wilnot & Hobbs Mfg. Co., Bridgeport.

#### Tumbling Barrels

Henderson Bros., Waterbury, Conn.

#### Turnbuckles

Cleveland City Forge & Iron Co., Cleveland, O.

#### Twist Drills

Cleveland Twist Drill Co., Cleveland, Mass.  
Morse Twist Drill & Machine Co., New Bedford, Mass.  
New Process Twist Drill Co., Taunton, Mass.  
Slocumb, J. T. & Co., Providence, R. I.  
Standard Tool Co., Cleveland, O.

#### Twist Drill Grinders

Heald, L. S. & Son, Barre, Mass.  
Washburn Shops of Worcester Polytechnic Inst., Worcester, Mass.

#### Union Couplings

Dart, E. M. Mfg. Co., Providence, R. I.

#### Upolisters' Hardware

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

#### Valves, Gas, Water and Steam

Ashton Valve Co., Boston, Mass.  
Chapman Valve Mfg. Co., Boston.  
Crosby Steam Gate & Valve Co., Boston.  
Jenkins Bros., 71 John, N. Y.  
Kennedy Valve Mfg. Co., 75 John St., N. Y.  
McNab & Harlin Mfg. Co., 56 John, N. Y.  
Mason Regulator Co., Boston, Mass.  
Wood, R. D. & Co., Philadelphia, Pa.

#### Varnish

Standard Varnish Works, 29 Broadway, N. Y.

#### Vegetable Slicers

Streeter, N. R. & Co., Rochester, N. Y.

#### Ventilating Fans

American Blower Co., Detroit, Mich.  
Bayley, Wm. & Sons Co., Milwaukee, Wis.  
Boston Blower Co., Hyde Park, Mass.  
Buffalo Forge Co., Buffalo, N. Y.  
Exeter Machine Wks., Boston, Mass.  
Perkins, B. F. & Son, Holyoke, Mass.

#### Ventilating System

Ormsby, C. A., Melrose, Mass.

#### Ventilator Appliances

Howard & Morse, 45 Fulton St., N. Y.

#### Ventilators

Drouve, G. Co., Bridgeport, Conn.

#### Ventilator Openers

Ormsby, E. A., Melrose, Mass.

#### Vises

Athol Machine Co., Athol, Mass.  
Bignall & Keeler Mfg. Co., Edwardsville, Ill.  
Hollan's Mfg. Co., Erie, Pa.  
Howard Iron Works, Buffalo, N. Y.  
Lewis Tool Co., 44 Barclay St., N. Y.  
Parker, Chas. Co., Meriden, Conn.  
Frontis Vise Co., 44 Barclay, N. Y.  
Utica Drop Forge & Tool Co., Utica, N. Y.

#### Wagon Jacks

Covert Mfg. Co., West Troy, N. Y.  
Covert's Saddle Works, Farmer, N. Y.  
Lane Bros. Co., Poughkeepsie, N. Y.  
Morrow, P. C., Newport, Pa.

#### Wagons

Shipman, Bradt & Co., De Kalb, Ill.

#### Washers

Hall's, Sam'l Sons, 229 West 10th St., N. Y.  
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.  
Nest & Washer Mfg. Co., Milwaukee, Wis.  
Wilson & Smith, Worcester, Mass.

#### Washers, Lead

Milton Mfg. Co., Milton, Pa.

#### Washing Machines

Brammer, H. F. Mfg. Co., Davenport, Ia.  
Clark, Quipen & Morse, Peoria, Ill.  
Richmond Cedar Works, Richmond, Va.  
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

#### Watchman's Clocks

Nantz, C. & Co., 121 Duane St., N. Y.  
Waggoner Watchman Clock Co., Grand Rapids, Mich.

#### Water Gates

Kennedy Valve Mfg. Co., 75 John St., N. Y.

#### Water Wheels

Pool, Robt. & Son Co., Baltimore, Md.

#### Weldless Steel Flanges

Latrobe Steel Co., Philadelphia, Pa.

#### Well Supplies

Cook, A. D., Lawrenceburg, Ind.

#### Wheelbarrows

American Steel Scraper Co., Sidney, O.  
Kilbourne & Jacobs Mfg. Co., Columbus, Lansing Wheelbarrow Co., Lansing, Mich.  
Syracuse Chilled Plow Co., Syracuse, N. Y.

#### Wind Mills

Flint & Walling Co., Kendallville, Ind.

#### Window Cord

Samson Cordage Works, Boston, Mass.

#### Window Fasteners

Stanley Works, New Britain, Conn.

#### Window Stop Adjusters

Ives, H. B. & Co., New Haven, Conn.

#### Window Weights

Harner & Reed Mfg. Co., Boston, Mass.

#### Wire

Cleveland Wire Spring Co., Cleveland, O.  
Dillon-Grissold Wire Co., Sterling, Ill.  
Grand Crossing Tack Co., Grand Crossing, Ill.  
Kid R. Bros. & Burgher Steel Wire Co., McKee's Rocks, Pa.  
Miller & Van Winkle, Brooklyn, N. Y.  
National Wire Co., New Haven, Ct.  
New Haven Wire Co., New Haven, Conn.  
Prentiss, Geo. W. & Co., Holyoke, Mass.  
Reading Screw Co., Norristown, Pa.  
Spencer Wire Co., Worcester, Mass.  
Stewart Wire Co., Easton, Pa.  
Summit Wire Co., Cuyahoga Falls, O.  
Townsend, C. C. & E. P., New Brighton, Trenton Iron Co., Trenton, N. J.  
Wolff, R. H. & Co., Ltd., 115th St. and Harlem River, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.

#### Wire Cloth

Barnum, E. T., Detroit, Mich.  
Clinton Wire Cloth Co., Flaton, Mass.  
Derby Edward & Sons, Philadelphia.  
Eatey Wire Works Co., 65 Fulton St., New York.  
Gilbert & Bennett Mfg. Co., 44 Cliff St., New York.  
Howard & Morse, 45 Fulton St., N. Y.  
Hungerford, U. T., Brass & Copper Co., 121 Worth St., New York.  
Ludlow Saylor Wire Co., St. Louis, Mo.  
Michigan Wire Cloth Co., Detroit, Mich.  
New Freedom Wire Cloth Co., New Freedom, Pa.  
N. J. Wire Cloth Co., Trenton, N. J.  
Schaefer's Sons, Buffalo, N. Y.  
Twyer, W. S. Co., Cleveland, O.  
Wickwire Bros., Cortlandt, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.

#### Wire Cutters

Chandler & Farquhar, Boston, Mass.  
King, J. M. & Co., Watertown, N. Y.  
Utica Drop Forge & Tool Co., Utica, N. Y.

#### Wire Dies

McFarland, Wm., Trenton, N. J.

#### Wire Drawing Machinery

Morgan Construction Co., Worcester, Mass.  
Moseberg & Granville Mfg. Co., Providence, R. I.

#### Wire Fences—(See Fencing, Iron and Wire.)

#### Wire Goods

Brooks, M. S. & Sons, Chester, Conn.  
Darby, Edward & Sons, Philadelphia.  
Gilbert & Bennett Mfg. Co., 44 Cliff St., New York.  
Jenckes, E. Mfg. Co., Pawtucket, R. I.  
Michigan Wire Cloth Co., Detroit, Mich.  
Schaefer's Sons, Buffalo, N. Y.  
Wickwire Bros., Cortlandt, N. Y.  
Wire Goods Co., Worcester, Mass.

#### Wire Forming Machinery

Automatic Machine Co., Bridgeport, Ct.  
Manville, E. J. Mch. Co., Waterbury, Ct.  
Norton, A. H. Mch. Co., Bridgeport, Ct.  
Snuster, F. B. Co., New Haven, Conn.

#### Wire Mill Machinery

Braddock Mch. & Mfg. Co., Braddock, Pa.  
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

#### Wire Mats

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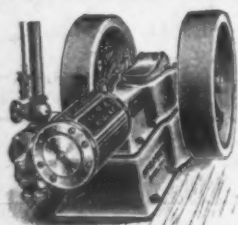
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